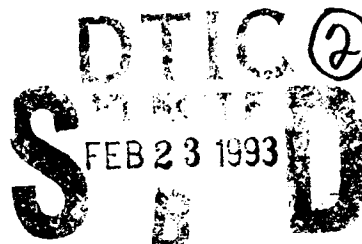AD-A260 818

Who Should Train?

Substituting Civilian-Provided Training for Military Training

Lawrence M. Hanser, Joyce N. Davidson,
Cathleen Stasz

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Substituting Civilian-Provided Training for Military Training

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with Thomas J. Martin

Prepared for the
Assistant Secretary of Defense
(Force Management and Personnel)

RAND

PREFACE

The initial skill training of military enlisted personnel has historically been conducted by the military services. In light of expected changes in the size and structure of the force, and the increasing importance of the reserve forces, Congress has asked whether initial skill training for technical occupations could be provided by civilian institutions. This report describes an analysis of the issues associated with the feasibility of using civilian institutions for this purpose. It should be of specific interest to policymakers concerned with maximizing the effectiveness of military training resources and to educational institutions interested in understanding their role in providing military technical training.

The research was sponsored by the Directorate for Training Policy, Office of the Assistant Secretary of Defense (Force Management and Personnel). The report was prepared within the Defense Manpower Research Center, part of RAND's National Defense Research Institute, a federally funded research and development center sponsored by the Office of the Secretary of Defense and the Joint Staff.

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SUMMARY

INTRODUCTION

The U.S. Armed Forces will train over 300,000 individuals in initial technical skills in fiscal year 1992 at a cost of $2 billion to $3 billion. Most of this training is done by the services themselves, though some is contracted out to civilian organizations. Several times in the recent past, proposals have been advanced for increasing the use of civilian organizations to provide this training. Among the reasons given for doing so is the expectation that such training would be less expensive to procure than to furnish.

Most recently, the 1990 Defense Authorization Act (P.L. 101–189, Section 517) calls for the U.S. General Accounting Office (GAO) to prepare a report on various options of providing technical training for preaccession and postaccession recruits and reserves, using civilian institutions of higher education and vocational schools. Specifically, the GAO is to address the feasibility of using civilian-provided training as a substitute for current military technical initial skill training (IST) and to examine the savings in personnel and other costs that the implementation of such programs could bring about.

Shortly before the GAO was so tasked, RAND initiated the current study for the Office of the Assistant Secretary of Defense (Force Management and Personnel) (OASD (FM&P)). As a result, an agreement was made between GAO and OASD (FM&P) that the results of the RAND project would substitute for a separate GAO undertaking. The broad objective of this project is to investigate the feasibility of using civilian institutions as providers of IST for Armed Forces personnel and to develop a strategy for choosing among feasible alternatives.

PERSPECTIVES ON THE USE OF CIVILIAN INSTITUTIONS

The military has a long history of using civilian providers for various kinds of training and has experimented with a variety of programs that included such training as a substitute for military technical training. In past years, the Navy has sponsored a Direct Procurement Petty Officer Program and has developed and tested a Sea and Air Mariner program, both focused on civilian-provided training. Currently, the Navy contracts more initial skill training than the other services. The Army Reserve contracts with civilian or-

ganizations to provide IST in at least one occupational specialty, and the Army National Guard Bureau encourages the use of local training options for members of the National Guard. Finally, all of the services have regulations regarding the acquisition of civilian-trained personnel who are not required to go through initial skill training because of relevant work experience or technical education (i.e., lateral entry programs).

Civilian institutions are interested in and capable of expanding their role in providing military technical training. Local systems of public and private postsecondary education and training institutions form a network of potential providers who seem able to supply relevant training in selected occupations. Of these, the community colleges have been most aggressive in supporting the use of civilian institutions for military training; many have contracted with the military to provide technical training. A major point in support of using civilian institutions—particularly the proprietary school sector—is their ability to respond to the needs of a very fluid civilian job market and the belief that competition among institutions would drive down the cost of training to the military's advantage. The ability of community colleges and other training institutions to respond to changing market demands is well documented.

In spite of the military's attempts at using civilian institutions and the clear interest of civilian institutions in providing military technical training, we see failed legislation and programs and a fair amount of controversy. Supporters of civilian-provided training, both inside and outside the military, believe that such training would result in considerable cost savings, but we have seen no data to support this conclusion. Unfortunately, both the military and the civilian community lack data to systematically evaluate the feasibility of civilian-provided training on cost, quality, or other grounds. As a result, debate and opinion often substitute for evidence.

CONCEPTUAL FRAMEWORK

There is sufficient evidence that civilian organizations can provide military technical training; the more important question is how to choose from among the set of alternatives. The issues are complex. The real cost of training includes the cost of recruiting as well as the cost of the training itself. It also includes the costs or benefits associated with net gains or losses in attrition and retention that may accrue to different programs, not to mention the costs associated with developing and maintaining such programs. For evaluating training options, we developed a conceptual framework based on selecting the

lowest-cost training scenario that produces a given level of trained man-years (TMY). This approach recognizes that different training options will affect a number of variables, such as attrition, the length of in-house training, and the propensity to enlist, that in turn directly affect TMY.[1] Although the lack of data ruled out anything more than a conceptual application to past or ongoing programs, the framework provides a strategy for comparing training scenarios.

CHOOSING BETWEEN MILITARY- AND CIVILIAN-PROVIDED TRAINING

Based on our analysis, a number of alternative training designs making use of civilian organizations seem feasible. The scope of military occupations that would be amenable to civilian-provided training is substantial, as evidenced by the number of occupations included in the services' lateral entry regulations and the extent of similarity across military and civilian occupations found by the OASD-sponsored "occupational crosswalk" project.

From our review and analysis of existing programs, and the data requirements driven by our concept of TMY, it is clear that the complex set of issues associated with choosing among training alternatives simply cannot be answered by existing data. Gathering this information is best accomplished through a demonstration project. Recognizing that a start-up demonstration project is a major and expensive undertaking, we outlined an ideal demonstration project and then looked at that outline to see where current and planned studies might be adapted to fulfill its objectives.

Both the Army and Air Force are actively studying civilian-provided training options, primarily for their active force recruits. In our judgment, many questions could be answered by making minor modifications to these military initiatives, instead of initiating a demonstration project from the ground up. Thus, we have taken the basic designs of ongoing and planned projects and suggested how they might be modified to better address policy questions. By working with current and planned service programs, many important questions could be answered with minimum disruption to current practices, at minimum additional cost, and in a minimum amount of time.

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[1]A trained man-year refers to the value of an individual's services that are available to an employer for one year after the individual has completed training. In the case of the military, if an individual completes a four-year term of service, but is in training for one year, that individual contributes four man-years of service but only three *trained* man-years of service.

CONCLUSIONS

Many Military Occupations Are Amenable to Civilian Training

It is clear that the technical skill requirements of civilian and military occupations overlap substantially. The military and civilian training and education establishments have formally examined the extent of this overlap in several projects. Thus, the issue of using civilian institutions is not so much a question of whether it can be done, but instead a question of the specific occupations in which it should be done, how it can best be done, and whether it is cost-efficient to do so.

Former and Existing Programs Have Not Been Adequately Evaluated

We conducted our review of past and current programs in the context of a conceptual model for evaluating training programs. We hypothesized that civilian IST programs could be expected to affect recruiting, performance during training and beyond, attrition, and reenlistment, as well as the marginal and fixed costs of training. That is, through a number of complex mechanisms, civilian-provided IST programs can be expected to affect the cost and quantity of trained man-years available to the services. Training programs need to be evaluated within this broad systemic context. Unfortunately, they have not been.

Civilian-Provided IST Appears to Have Benefits in Some Circumstances

There appear to be clear benefits to using civilian institutions for training in some circumstances. For example, for prior-service reservists and guardsmen whose active-duty occupations do not match their reserve or National Guard duty assignment, civilian-provided training seems a good idea. Additional time away from their homes and families in order to attend military training may be a strong disincentive to their joining or continuing in a reserve component. In addition, if civilian training can be provided locally, savings in pay and travel costs, as well as increased readiness due to availability of training, may provide substantial incentives for the services to undertake and encourage the use of such programs.

The benefit of using civilian-provided IST for nonprior-service reservists is not nearly as clear-cut. Because of the relatively short amount of time that nonprior-service reservists and guardsmen spend

at active duty for training, and the services' concerns with inculcating military values, the overall effect of civilian training for these individuals may be mixed. It may be important for these individuals to attend IST in a military environment in order to reinforce the military values taught in basic training. On the other hand, because of the civilian environment in which reservists and guardsmen live and work, an additional few months of exposure to military values during IST may have little impact in the long run.

The question is far more complex for the active forces. The savings or improvements in the quality of training that might result from the use of civilian institutions is unknown. It is not at all clear, and there is no evidence, that any civilian postaccession IST program would be either less costly or provide higher-quality training than current military programs. In fact, existing centralized military training capacity seems to favor the status quo of military-provided postaccession training.

As for preaccession civilian-provided IST, the potential effects are far too complex to merit proceeding without the benefit of a carefully designed and evaluated demonstration project. In addition to costs, such programs could reasonably be expected to affect both the quality and flow of manpower to operational military units. Determining the appropriate level of stipend that would ensure an adequate supply of quality manpower to the services within a given occupation complicates the design and evaluation of pre-accession IST programs and is an important factor in the recommendation for a demonstration project.

Institutional Barriers to Implementation Exist

In addition to the difficult choices associated with developing and using civilian-provided IST programs, we believe that the military's inclination to embrace widespread use of civilian institutions is in doubt and is a cause for concern in future attempts at implementing civilian training programs. Furthermore, military resistance to civilian-provided training is not likely to be overcome simply with positive results from a demonstration project. It seems clear that without appropriate incentives, the propensity of the services will be to shy away from civilian-provided IST.

Even if military objections are overcome, implementation may not be straightforward. Criteria for selecting civilian institutions, monitoring training and its outcomes, and so on, would have to be worked out. Given the decentralized nature of the civilian providers, imple-

mentation guidelines must be flexible enough to respond to local conditions. Beyond that, details for implementing different types of programs remain unknown, but could be examined in the course of a demonstration project.

RECOMMENDATIONS

Develop a Joint-Service Working Group on Training Policy

As the need for interservice coordination grows, formalized procedures for addressing interservice training issues become increasingly important. They will be especially needed for coordinating civilian-provided IST for all four services. To address coordination and policy requirements, we recommend the development of a Joint-Service Working Group on Training Policy.

Undertake a Series of Demonstration Projects

In our judgment, neither past nor current civilian-provided IST programs within the services have been evaluated properly. Based on an examination of past history, current programs, and organizational capabilities and requirements, we propose a number of alternative civilian/military training scenarios. We further propose a means for examining these scenarios with a minimum amount of modification to ongoing plans. We believe that these demonstration projects will provide the information needed by policymakers. It is our recommendation that they be conducted as the first charge of the Joint-Service Working Group on Training Policy.

ACKNOWLEDGMENTS

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GLOSSARY

AACJC	American Association of Community and Junior Colleges
ACASP	Army Civilian Acquired Skills Program
AIT	Advanced Individual Training (Army)
ARCOM	Army Reserve Command
ARNG	Army National Guard
ATC	Air Force Air Training Command
AVTS	Area vocational technical school
CBO	Community-based organization
CNET	Chief of Naval Education and Training
CNTECHTRA	Chief of Naval Technical Training
COTR	Contracting officer's technical representative
CIVTRAIN	Navy Civilian Training Inventory
DCSOPS	Army Deputy Chief of Staff for Operations
DoD	Department of Defense
DPEP	Navy Direct Procurement Enlistment Program
DPPO	Navy Direct Procurement Petty Officer program
ETP	California Employment Training Panel program
FMP	OASD/Force Management and Personnel
FORSCOM	Army Forces Command
GAO	United States General Accounting Office
IST	Initial skill training (also AIT, Tech Training, C-School, or A-School)
ITRO	Inter-Service Training Review Organization
JTPA	Job Training Partnership Act
LEAP	Navy Lateral Entry Accession Program
LPN	Licensed practical nurse
MEPS	Military Entrance Processing Station
MOS	Military occupational specialty
NAVE	National Assessment of Vocational Education
NCO	Noncommissioned officer
NEC	Navy enlisted classification
NOICC	National Occupational Information Coordinating Committee
NPRDC	Navy Personnel Research and Development Center
NTSP	Navy Technical Scholarship Program
OASD	Office of the Assistant Secretary of Defense
OEM	Original equipment manufacturer
OJT	On-the-job training
OSUT	One station unit training (Army)
OTS	Off-the-shelf training
POI	Program of instruction
POTO	ARNG plans, operations, and training officer

RAMP	Reserve Allied Medical Personnel program (within SAM)
REQUEST	Army Recruit Enlistment Query System
ROTC	Reserve Officer Training Corps
SAM	Navy Sea and Air Mariner program
SDCCD	San Diego Community College District
SELRES	Navy selected reserves
SERTA	Skilled Enlisted Reserve Training Act
SIS	Navy shipboard indoctrination school
SQT	Army skill qualification test
TMY	Trained man-year
TPDC	DoD Training and Performance Data Center
TRADOC	Army Training and Doctrine Command
VOTECH	Vocational/technical

1. INTRODUCTION

In fiscal year 1990 over $5 billion was spent on specialized skill training "needed to prepare military personnel for specific jobs in the Military Services."[1] Approximately half of the student/trainee man-years in this category were devoted to initial skill training (IST), the focus of this report.[2] The Department of Defense (DoD) projects that in fiscal year 1992, approximately 300,000 individuals will complete IST in over 1000 courses of instruction. This translates into a training load of almost 63,000 student/trainee man-years in fiscal year 1992. Based on proportionate workload and costs, one might very roughly estimate that for fiscal year 1992, approximately 27,000 military and civilian personnel will be needed to support IST and total costs for IST will lie somewhere between $2 billion and $3 billion.[3] The number of trainees and support personnel is projected to decline slightly by fiscal year 1993. Nonetheless, IST in the Department of Defense will remain a big business.

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[1]See *Department of Defense Military Manpower Training Report FY 1992*, Office of the Assistant Secretary of Defense (Force Management and Personnel), April 1991. DoD defines specialized skill training as that which

> provides officers and enlisted personnel with new or higher levels of skill in military specialties or functional areas to match specific job requirements. This category includes Army Advanced Individual Training and Navy Apprenticeship Training. Certain flight-related training, such as training of air traffic controllers and aircraft mechanics, and survival training in the Air Force, is reported under Specialized Skill Training. Officer acquisition programs are not included in Specialized Skill Training. The Marine Corps Combat Training (MCT) phase of the new Marine Battle Skills Training has been included in this category beginning in FY89.

[2]Initial skill training is a subset of specialized skill training. "Initial Skill Training (Enlisted) includes all formal training normally given immediately after Recruit Training and leading toward the award of a military occupational specialty or rating at the lowest skill level. Successful completion of the training qualifies the enlisted member to take a position in the job structure of the Service and to progress, through job experience, to the journeyman level." (*Department of Defense Military Manpower Training Report FY 1992.*)

[3]DoD does not report directly either the number of support personnel for or the total cost of IST. Approximately 48,000 military and 7000 civilian personnel are projected to support specialized skill training functions across DoD in fiscal year 1992 (Table VIII-9, page VIII-6). Specialized skill training load for fiscal year 1992 is projected to be 128,244 (Table V-1, page V-2). Specialized skill training costs for fiscal year 1992 are projected to be $4.8 billion (Table IX-5, page IX-7). (*Department of Defense Military Manpower Training Report FY 1992.*)

Although the services provide the bulk of IST, some is contracted out to public and private civilian organizations. The use of civilian organizations as providers of technical training for military recruits and members of reserve components has been promoted for several reasons, including the following:

- *Reduced costs over military-provided training.* Many military occupations have direct civilian counterparts, such as vehicle mechanic, cook, and carpenter. Because such training is widely available in the civilian sector, the costs of procuring it may be less than the cost of providing it.

- *Source of additional recruits.* Some military occupations are difficult to fill because of competition from civilian employers. Civilian-provided training may be seen by recruits as a means of obtaining valuable training that will facilitate later entry into a civilian job, and thus serve as an enlistment incentive. More generally, civilian-provided training may be perceived as more attractive to recruits than military-provided training, furnishing an incentive for young adults to enlist.

- *Refresher training for reserve components.* Members of the reserve components spend fewer than 50 days per year in training. As a result, skills may decay, especially in highly technical occupations. Civilian-provided training opportunities represent one option that could potentially remediate this problem.

- *Retraining to improve reserve component readiness.* Many individuals in reserve components have prior service in a different occupational specialty than the one to which they are assigned. Civilian-provided training is one option that could potentially reduce this training shortfall.

- *Increased ratio of operational to nonoperational units in the military components.* To the extent that military personnel can be relieved of responsibilities for providing technical training, nonoperational units that support training can be reduced in size or eliminated.

Proposals for making greater use of civilian providers have been advanced several times. Most recently, the 1990 Defense Authorization Act (P.L. 101–189, Section 517) calls for the U.S. General Accounting Office (GAO) to prepare a report on various options of providing technical training for military recruits and members of the reserve components using civilian institutions of higher education and vocational schools. Specifically, the GAO was tasked to address the feasi-

bility of using such training and the savings in personnel and other costs that could result from the implementation of such programs.[4]

STUDY PURPOSE

Shortly before the GAO was so tasked, we initiated the current study for the Office of the Assistant Secretary of Defense, Force Management and Personnel (OASD (FM&P)). The broad objective of this project was to investigate the feasibility of using civilian institutions as providers of IST for Armed Forces personnel, encompassing the objectives included in the Authorization Act.[5] However, we considered it important to go beyond simply examining the feasibility of civilian-provided training programs to include developing and applying a strategy for choosing from among a set of feasible alternatives. We intended to develop a strategy for comparing alternative programs and to apply that strategy to past or ongoing civilian- and military-provided training programs.

Our review of past and existing programs in which the services have used civilian-provided training revealed several failures to start or sustain civilian-provided training programs, but it also found notable examples of ongoing programs. Unfortunately, neither the past nor the ongoing programs have been rigorously evaluated in terms of either cost or quality of training, nor were our attempts at evaluation successful, simply owing to the lack of relevant data. That is, the services themselves have neither developed nor applied a strategy for making informed choices among these alternatives, nor have they rigorously evaluated the outcomes associated with their choices. As a result, our project focused on reviewing military experience with such programs, identifying and discussing the issues associated with designing and implementing them, developing a conceptual framework

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[4]Since the RAND study addressing the broad objectives of the Authorization Act was under way prior to GAO beginning its own project, an agreement was reached between GAO and OASD (FM&P) to rely on the results of the RAND study in lieu of undertaking a separate project. At approximately the same time, the Air Force Air Training Command launched its own study to examine these issues, with specific focus on their relevance to Air Force training. The Army Training and Doctrine Command had also begun to examine several questions relevant to the objectives of the Authorization Act.

[5]The Authorization Act specifically refers to technical training for "military recruits and members of the reserve components." We have interpreted this to refer to the entry-level technical training characteristically provided by the services prior to an individual's first duty assignment—DoD refers to this training as Initial Skill Training (IST). In the case of members of the reserve components who have prior service experience, we interpret the congressional intent as referring to training that initially qualifies them in an occupation different from their active duty occupation.

for generating and evaluating feasible alternatives, and formulating a strategy for gathering the data on which to base future policy decisions.

STUDY APPROACH

Our approach consisted of several steps. We began by surveying the history of civilian-provided technical training, including previous legislation, regulations, pilot programs, and relevant research literatures. This review provided a broad perspective of the relevant issues and the views held about them by both civilian and military training providers.

To gather current viewpoints and information about ongoing programs, and to elicit respondents' views on the positive and negative effects of using civilian-provided training as a substitute for what the established military training system provides, we interviewed key actors in relevant military organizations, including the U.S. Army Training and Doctrine Command (TRADOC), U.S. Navy Chief of Naval Education and Training (CNET), Chief of Naval Technical Training (CNTECTRA), and Civilian-provided Training Resources Program, U.S. Air Force Air Training Command (ATC), U.S. Army Deputy Chief of Staff for Operations and Plans (DCSOPS), U.S. Navy Personnel Research and Development Center (NPRDC), Department of Defense Training and Performance Data Center (TPDC), and Office of the Assistant Secretary of Defense for Force Management and Personnel (OASD (FM&P)). In the civilian sector we spoke with representatives from the American Association of Community and Junior Colleges (AACJC) and the San Diego Community College District (SDCCD), and we contacted several other trade and technical associations. These interviews and extant documentation provided information for describing past and current training programs and for determining the feasibility of implementing future programs that embrace a larger set of options than those currently employed.

At the same time that we were gathering information on past and ongoing training programs, we began to develop a strategy for comparing alternative programs. To improve on a simple cost model, we developed a conceptual framework based on a model of trained man-years (TMY) that focuses not only on minimum skill proficiency and the costs of attaining it, but also on the availability of that proficiency to the military over a period of time.

When we examined past and current programs, we found little evidence that the programs had been evaluated even with a simple cost

model, let alone the more comprehensive model of TMY. Furthermore, we uncovered no data with which to examine the assertions of either the cost- or quality-effectiveness of these programs. Because the basic questions of the comparative cost-effectiveness and quality of military and civilian-provided training remain unanswered by either current or past programs, and the required data from these programs cannot be recaptured adequately, we outline a demonstration project. This demonstration project is designed to provide the data necessary for evaluating the major alternative strategies for using civilian institutions to provide IST for military recruits and members of the reserve components. Because several of the services are currently exploring civilian-provided training options, we identify a unique opportunity to build a demonstration project by modifying their current plans.

ORGANIZATION OF THE REPORT

This report is divided into six sections. Section 2 provides background for the study and discusses the nature of military training and past and current efforts to use civilian providers for technical training. In Sec. 3 we examine approaches for evaluating the cost and quality of training programs and present a conceptual framework for comparing the expected benefits of different program options. Section 4 examines past, current, and planned programs in the context of TMY. Section 5 summarizes the data requirements for comparing training alternatives and presents an approach for evaluating several specific training scenarios in the context of a series of demonstration projects. Section 6 presents our conclusions and recommendations.

2. CIVILIAN-PROVIDED TECHNICAL TRAINING IN THE MILITARY: HISTORY AND ISSUES

Why should the military make use of civilian-provided technical training? Why would civilian institutions want to provide it? This section examines the history and issues surrounding civilian-provided training in several steps. First, we describe the current military training system, the basic options for using civilian institutions, and the array of civilian institutions that are available to provide technical training and education. Next, we examine legislative or policy efforts for creating civilian-provided training programs. Finally, we discuss the pros and cons in the current debate: What makes civilian-provided training a feasible and effective option? What barriers exist for establishing and implementing such programs?

OVERVIEW OF MILITARY TRAINING

The services' training systems are similar. Recruits are brought to a reception center where they are given uniforms, instruction in military discipline, and, in some services, various classification tests.[1] Training generally consists of two segments: recruit training and Initial Skill Training (IST). Except for some U.S. Army combat occupations in which recruit and IST are merged into a single training course (One Station Unit Training, or OSUT), recruit training always precedes IST. Recruit training generally spans 6 to 11 weeks and focuses on indoctrination into the military environment and acquisition of fundamental skills required of every soldier, seaman, airman, or marine. In addition, because military and civilian environments are so fundamentally different, an important aspect of basic training is that it provides an early opportunity to identify those individuals who are unable to adapt to military life.

Upon successful completion of recruit training, each service man or woman is assigned to a job (if the specialty requires only on-the-job training) or, as is the case with the majority of recruits, IST. Depending on the complexity of the occupation, this training may last from a few weeks to six months, although some may be considerably longer. There are differences both within and among the services as to how this is accomplished. For example, not all seamen receive ex-

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[1]See Sticht et al. (1987) for an overview of training and more detail on training models and methods.

tensive formal schoolhouse training before being sent to the fleet. IST is designed to provide the knowledge and skills needed to function as a novice in an occupation. IST generally consists of training in the basic principles that are fundamental to the occupation and lessons in safe job practices. Trainees are also introduced to the specific equipment used in the field and trained on the tasks they will be expected to perform. Training is provided at technical training centers (e.g., the Air Force operates six centers) or military schoolhouses, which are specialized according to type (e.g., the Army operates over 20 schools at different installations). From IST, new personnel go to their duty stations.

All services continue to provide occupational training throughout the serviceman's career through on-the-job training (OJT), correspondence courses, additional schoolhouse training, or in troop schools. Since the focus of this study is on options for providing IST, these post-IST training opportunities are not considered further.

OVERVIEW OF OPTIONS FOR OBTAINING MILITARY TRAINING

Several alternatives to the current military services' training system exist. Throughout the remainder of this report we discuss a number of these alternatives and their feasibility. Here we briefly identify a structure for thinking about the different alternatives and organizing our discussion of them. Although there may appear to be an almost unlimited number of alternatives, we can describe the differences among them in terms of four broad categories. What follows is a short introduction to these categories.

First, the timing of IST could be altered so that it occurs before enlistment instead of after. Throughout this report we will refer to these options as *preaccession* and *postaccession* training.

Second, there are various options for bearing the cost of training. We envision circumstances under which either the individual would bear the entire cost of training or the individual and the services would share the cost of training. In this report we refer to these options as *sponsored* training when the military services pay for some or all of the costs of training and *unsponsored* training when the individual pays the entire cost of training.

Third, the location of training can be centralized or decentralized to greater or lesser degrees. *Preaccession* IST could be offered at centralized civilian-operated training centers, regional training centers, or even hometown training institutions (i.e., varying degrees of *cen-*

tralized or *decentralized training*). *Postaccession* IST could be modi-
fied to include increased use of on-the-job training or training at the
servicemember's first duty assignment (i.e., *decentralized training*).

Finally, there is one cross-cutting issue that we introduce only briefly
here. This is the issue of curriculum control. Regardless of which of
the above training options are adopted, if any, some or all of the re-
sponsibility for curriculum development and maintenance could be
shifted to civilian contractors (i.e., varying degrees of *military* or *civil-
ian control* over the curriculum).

Clearly, civilian-provided training does not represent just one alter-
native to military-provided training, but many. Past and current
programs using civilian organizations as providers of military train-
ing represent various combinations of these categories. In Sec. 4, we
discuss a number of variations and their potential effects on training
program efficacy. We also discuss how these options may differen-
tially affect the reserve and active force components.

SYSTEMS OF CIVILIAN INSTITUTIONS FOR WORK-RELATED EDUCATION AND TRAINING

Who might provide technical training equivalent to IST to military
personnel? Several postsecondary organizations or "delivery systems"
currently provide work-related education and training relevant to
military specialties, including community colleges, technical insti-
tutes, and proprietary vocational schools.[2] These organizations vary
according to status (public, private, nonprofit); type (primarily voca-
tional or academic); sources of funding (federal, state, local); and the
target population served (disadvantaged, college level, adults, ad-
vanced youth, at-risk youth).[3] A brief profile of these institutions

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[2]We consider only postsecondary providers because the civilian-provided training
options under consideration are aimed at high school graduates. Although postsec-
ondary vocational adult programs may use secondary vocational school facilities to
conduct evening classes, as in Area Vocational Technical Schools (AVTS), these adult
programs are most often short-term, noncredit offerings, such as English as a Second
Language, remedial education, general courses, and some vocational courses
(McDonnell and Grubb, 1991). We also exclude community-based organizations (CBOs)
as potential providers of military technical training. CBOs are primarily local groups,
often representing a particular constituency (Hispanics, blacks, displaced workers,
handicapped), and supported by federal Jobs Training Partnership Act funds and gov-
ernmental subsidies for other education and training programs and social services
(Grubb and McDonnell, 1991).

[3]See Sticht et al. (1987) for a discussion of types of organizations that deliver elec-
tronics training programs and how they compare with similar military-based instruc-
tion. See Carnevale et al. (1990) for an overview of civilian providers of technical
training and their links with employers.

follows. Although other organizations may train their own employees or provide training tailored to the needs of employers, those discussed below are most likely to provide the kinds of technical training needed by the military.[4]

Community Colleges

There are 1211 public and private community colleges in the United States today.[5] Publicly funded community colleges are now relatively ubiquitous; almost all regions of the country include a community college. Historically, their mission has been to provide programs that prepare students for jobs not requiring baccalaureate degrees or for transfer to four-year colleges and universities. In recent years, however, changes in technology, competition, and productivity have expanded their program offerings to basic skills, training and retraining of displaced workers or older, first-time labor force entrants (Carnevale, Gainer, and Schulz, 1990), and various types of customized training (Bragg and Jacobs, 1990). Many also offer federally subsidized programs for Jobs Training Partnership Act (JTPA) clients and welfare recipients (Grubb and McDonnell, 1991). In addition, declining enrollments in the 1980s caused many colleges to recruit students and provide new services to attract new groups of students (Goodwin, 1989).

In comparison to four-year institutions, two-year postsecondary institutions are more likely to attract a cross section of students by race, age, socioeconomic background, and level of ability (Wirt et al., 1989). Because of their accessibility and flexible class scheduling, community colleges serve a large number of adults employed either full- or part-time.

Although they vary in their mix of academic and vocational courses by state policy and local preferences, almost all offer a range of voca-

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[4]For the most part, firm-based training is directed to people and jobs in a specific firm, and most formal training is directed at the management level (Chance, 1988). Firms needing training for "technicians"—which includes many of the types of jobs targeted for civilian-provided training—often obtain it outside the firm in programs sponsored by community colleges and professional organizations, or from vendors, especially original equipment manufacturers (OEMs). OEM-sponsored training is specific to particular equipment, processes, and procedures. There is little available data on the length of training for various jobs or the cost of such training to firms. For further discussion see A. P. Carnevale and L. J. Gainer, *The Learning Enterprise*, American Society for Training and Development, Alexandria, Virginia, and U.S. Department of Labor, Washington D.C. (not dated).

[5]American Association of Community and Junior Colleges, personal correspondence, 1991.

tional programs leading to both associate's degrees and certificates (Grubb and McDonnell, 1991). In 1985, community colleges and technical institutes provided qualifying training to 1.6 million technical workers and upgrading training to 760,000 (Carnevale, Gainer, and Schulz, 1990). Several technical occupations seem particularly reliant on qualifying training from these sources, including inhalation therapists (46 percent), radiological technicians (39 percent), and dental hygienists (38 percent).

The National Assessment of Vocational Education (NAVE) estimated that two-year community colleges obtain about two-thirds of their funding from state and local governments. Most federal funds supporting vocational education are distributed through student loan and grant programs (about $4 billion) or student aid programs ($853 million). Most of the students receiving such funds, however, attend private proprietary schools, not public vocational schools or colleges (Wirt et al., 1989).

Technical Institutes

Publicly funded technical institutes are the creation of states and exist largely in the South. They offer longer and more intensive vocational programs than secondary schools, including two-year programs leading to Associate of Science or Applied Science degrees and shorter certificate programs. Although the two-year programs are similar to those offered by community colleges, technical institutes differ from community colleges in their concentration on vocational offerings and their relative lack of academic courses unrelated to vocational programs (Grubb and McDonnell, 1991).

While technical schools serve populations of students similar to those of community colleges, few students transfer to four-year colleges. Given their vocational focus, these schools also attract students with career goals that are clearer than those of many community college students, who experiment by taking a variety of courses or often fail to complete a program of study.[6]

According to one estimate, vocational, trade, and business schools—both public and private—provided qualifying training for approximately 1.11 million technical workers and upgrading training for 300,000 technical workers in 1985. Technical occupations particu-

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[6]NAVE data show that only 19 percent of high school graduates who enter community colleges complete a certificate or associate degree within four years of completing high school. This percentage is even lower for minorities and economically disadvantaged students (Wirt et al., 1989).

larly reliant on *public* vocational, trade, and business schools include licensed practical nurses (25 percent), data processing equipment repairers (12 percent), and heating and air-conditioning mechanics (9 percent) (Carnevale et al., 1987).

Proprietary Schools

Proprietary schools are profit-making institutions that provide training and education in particular occupational areas. These institutions mainly grant certificates in such areas as cosmetology and barbering, health care, trades, business and secretarial training, and technical areas. They are second only to industry-based training as providers in the private sector. Although estimates of proprietary school enrollments vary widely, NAVE places about 763,000 postsecondary vocational students in about 3000 schools (Goodwin, 1989).

Several technical occupations are particularly reliant on *private* vocational, technical, and business schools for qualifying training, including radiological technicians (19 percent), registered nurses (14 percent), and licensed practical nurses (12 percent). Tool and die makers (6 percent) and health technicians (4 percent) rely on private institutions for skill upgrading (Carnevale et al., 1987). Programs tend to be directed to the job market and to be limited to the skills and competencies directly required to function effectively within a particular job (Chance, 1988).

Unlike state-supported community colleges or technical institutes, proprietary schools function in a competitive environment where survival hinges on their ability to remain attuned to both employer and student markets. Programs are dropped when student enrollment decreases and added when industry demands indicate (Chance, 1988). They garner a large amount of funds through the federal student aid system. Proprietary schools have become adept at obtaining student aid for their students, who received about 25 percent of total federal student aid in 1986. Although they operate on a profit motive, they compete very effectively with public institutions (Wilms, 1987).

With some notable exceptions, proprietary schools as a group typically have poor reputations among public education and training providers (Grubb and McDonnell, 1991).[7] Although some proprietary schools are accredited by regional higher education accrediting institutions (the same organizations that accredit colleges and universi-

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[7]For a more sympathetic view of proprietary schools and their reputation as educational institutions, see Wilms (1987).

ties), and about half are accredited by one of the three proprietary accrediting associations (Association of Independent Colleges and Schools, National Association of Trade and Technical Schools, and American Council on Cosmetology Education), many lack accreditation status. In addition, a NAVE study indicates that proprietary school graduates fare somewhat worse than community college or public technical school students in reaping economic benefits from postsecondary vocational training. Proprietary school students are more likely to experience unemployment once or more during a year and are less likely to obtain jobs related to their training than their counterparts from other institutions. On the other hand, public technical school students tend to receive lower wages (Goodwin, 1989).

A BRIEF HISTORY OF CIVILIAN-PROVIDED TECHNICAL TRAINING IN THE MILITARY

Civilian-provided training or "contract" training, as a substitute for military technical training, is not new to the military.[8] Previous and existing programs are few in number, however, and have been established to meet a variety of particular needs. We review them briefly here and elaborate somewhat on evaluation of these programs in Sec. 4.[9]

Direct Procurement Petty Officer Program

The Direct Procurement Petty Officer Program (DPPO) was a lateral entry program established in 1971 and designed to test the feasibility of using civilian academic training. The basic notion behind this and

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[8]This section focuses on contract training programs that substitute for job-related technical skills training. It excludes many other types of contract training, such as training provided to civilian employees of the military, transition or skill upgrade training to prepare former military personnel to transfer to civilian jobs, basic literacy training for lower-ability recruits, advanced courses taken in pursuit of academic degrees, or other special programs like the Reserve Officers Training Corps (ROTC). For examples of some of these programs and technical training programs not discussed in this section, see *Vocational Education and Defense Preparedness Seminar Proceedings (September 29–October 1, 1982)*, American Vocational Association, Inc., Arlington, Virginia, Department of Defense, Washington, D.C., Department of Education, Washington, D.C. (ERIC Document ED 239 098); and Krause and Parker (1984).

[9]In addition to the programs summarized below, the Army and the Air Force are currently studying the civilian-provided training issue. The Army analysis of civilian-provided training is one component of a larger concept—Army Training 21—that explores how the Army can most effectively utilize a variety of training options. The Air Force study focuses entirely on the feasibility of civilian-provided training as defined in the current legislation.

other lateral entry programs was to increase the potential manpower pool by allowing enlisted personnel with previous specific skill training to enter the service at some level beyond the initial entry rank/rate of E-1.[10]

The Electronics Technician Class "A" course was selected for the pilot program, which added two alternatives to the normal recruiting and training procedure: (I) personnel were to be recruited after they had acquired the requisite technical training in civilian schools; (II) personnel were to be recruited and sent to a civilian technical school for one school year (36 weeks). The effectiveness of both groups was compared with that of recruits attending normal Class "A" school training. (See Standlee, Bilinski, and Saylor (1974, 1975) for reports on the DPPO pilot program.)

The Group I sample had graduated from accredited colleges or technical schools. They were enlisted at grade E-3, given recruit training, then sent directly to Shipboard Indoctrination School (SIS) for 13 weeks of training in maintenance of specific electronic equipment. The control group were recruited through usual channels, enlisted at E-1, given recruit training followed by 13 weeks of Electronic Technician "A" school training, and then sent to SIS (i.e., regular "A" school trainees).

An evaluation showed little difference between Group I and regular recruits except that regular recruits were judged to use schematics and wiring diagrams more efficiently. The DPPO program accrued lower costs. The evaluators recommended further implementation of the program, but noted three factors in need of further consideration: instructor experience, the functions of "A" school training to provide shore location and maintenance of fleet-to-shore rotation,[11] and ability to train in emergency situations if "A" schools were eliminated (Copeland and Thompson, 1983).

The Group II sample consisted of trainees who had completed high school; they were sent to be trained at one of two civilian institutions, then received recruit training and 13 weeks of Electronic Technician "A" school training, then attended SIS. The control group were regular "A" school trainees. Evaluators concluded that based on academic performance and cost criteria, sending electronics technicians to civilian schools (Group II) was successful, and they recommended contin-

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[10]See Copeland and Thompson (1982) for a historical review and analysis of lateral entry programs conducted by the DoD.

[11]One purpose of Navy shore billets is to provide personnel with acceptable breaks from shipboard duty.

uation of such instruction for early training. They noted the same three issues discussed above as needing further consideration (Copeland and Thompson, 1983).

The Navy, however, considered the program a failure because DPPO trainees failed to adapt or advance like regular "A" school graduates.[12] Traditionally, active-duty programs that enlist pretrained personnel at higher pay grades than other recruits have been unpopular with those already in the active services. According to Richardson and Fletcher (1985), two fears are expressed: (1) recruits not required to attend boot camp lack discipline and "military mindset," and (2) morale problems occur if outsiders are brought in laterally, particularly at higher pay grades, without having to undergo the same socialization and indoctrination process.

Sea and Air Mariner Program

The Navy's Sea and Air Mariner (SAM) program was designed to recruit nonprior-service personnel for the Navy Selected Reserves (SELRES).[13] The program sought to enlist 17- to 34-year-old personnel in targeted occupations where skill shortages existed or were expected (e.g., hospital corpsman, construction), at lower pay grades (E-1 to E-5). SAM personnel usually complete Navy recruit training and various kinds of technical training before returning to their home community to participate in monthly reserve drills and two weeks annually of active duty. Insufficient Navy training resources led to the development of a "VOTECH" component of the SAM program, which involved sending the reservists to a civilian school for their technical training. The Navy would reimburse tuition, books, and fees for the VOTECH training, plus a $2000 bonus for those in critical occupation areas (Van Matre, 1985).

Although several studies assessed the feasibility of this program and recommended its implementation (Richardson and Fletcher, 1985; Van Matre, 1985), the Navy decided not to carry out the SAM VOTECH option. Nonetheless, the work done in support of the planned Reserve Allied Medical Personnel (RAMP) component of the SAM program is of interest here because it provides a model for selecting civilian schools that provide technical training relevant to Navy jobs (Van Matre, 1985). It articulates a process for selecting and evaluating civilian providers that might be considered in future

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[12]Nick Van Matre, personal communication, December 17, 1990.

[13]For more detailed information on this program, see Richardson and Fletcher (1985) and Van Matre (1985).

program design or implementation. Such a process is a necessary component of any program attempting to use civilian-provided training as a substitute for military schoolhouse training.

Navy Contract Training Program

The Navy's current contract training program started in 1979, when shortages in qualified trainers motivated the Navy to enter contract training arrangements with several community colleges. In this program, the Navy contracts for instructor services but provides the curriculum and training facilities. The community colleges involved essentially act as brokers who hire and fire the instructors, the vast majority of whom are retired Navy personnel. By using retirees, experienced, active-duty personnel do not have to be deployed from the fleet to shore duty for instruction. This arrangement also gives the Navy complete control over the curriculum.

Originally, the Navy held separate sole-source cost reimbursement contracts with several community colleges. Currently, the San Diego Community College District (SDCCD) holds the contract for provision of instructors, having underbid several competitors for a fixed-price contract. Reportedly, this change in contract type resulted in a savings of about $4 million in fiscal year 1989. Although this program limits contract-provided training to instructor services, it is the most extensive current, ongoing program. We discuss it in more detail in Sec. 4.

Navy Technical Scholarship Program

The Navy Technical Scholarship Program (NTSP), established in 1989, was designed as an enlisted recruiting program aimed at community college students. Students, aged 17 to 22, must be enrolled full time in an accredited community college and have reached second-year status in an associate degree program in a technical field. Students must have and maintain a minimum 2.5 (out of 4.0) grade point average in school, pass the Navy's physical examination, and score in the upper two categories (Mental Category I and II) of the military's standard entrance exam. Qualifying students receive a stipend of $1000 a month and regular Navy benefits while completing their program of study. Upon graduation, the student attends basic recruit training (at grade E-3), then "A" school or other comparable training. That is, the community college courses do not substitute for "A" school but are in addition to it. The student must make an eight-

year commitment to Navy service, the first two years of which are spent attending school.

As originally conceived, the program was to operate in ten selected community college districts, geographically spread across the country; recruitment goals were specified for each. Although the program was authorized to accept 600 accessions, only 15 had enrolled as of April 1990. Cognizant officials believed that one reason for the low enrollment was a reluctance on the part of recruiters to recruit in community colleges. Typically, recruitment aims at high schools and high school students. A second reason was dissemination. Community colleges were notified about the program in a letter signed by officials from the Navy and the American Association of Community and Junior Colleges. While some responded enthusiastically, others showed little interest. Navy officials administering the NTSP felt that both of these problems would be resolved in time, as recruiters became more knowledgeable about the program and made the appropriate contacts in the targeted schools.

At this point in time, it is premature to assess the NTSP as a recruitment tool for higher-ability, technically trained and educated students. If the program eventually meets its recruitment goals, officials indicated that they would examine whether the community college training might substitute for "A" school training rather than simply being an addition to it.

Army National Guard Vocational Technical Program

The Army National Guard (ARNG) Vocational Technical (VOTECH) Program utilizes civilian-provided training for prior-service personnel who enlist in the ARNG. Training monies are budgeted in the ARNG appropriation and apportioned to the adjutant general in each state. Apportionment is determined, in part, by training targets identified in each unit. A local commander or state adjutant general can decide whether to purchase local training or to send soldiers to military training schools, regardless of which is more cost-effective. States follow standard guidelines in determining the choice of institution, costs and methods of payment, and so on. If a civilian-provider option is chosen, the Plans, Operations, and Training Officer (POTO), who reports to the adjutant general for the state, decides if the proposed program meets ARNG criteria. If so, the request is sent to the National Guard Bureau, which must approve it. The Bureau rejects many proposals. Its policy is to turn down requests for civilian-provided training if military training is available at Army or Air Force schools, regardless of cost. Exceptions are made for occupations with

high shortages, such as licensed practical nurses. For approved programs, the ARNG pays tuition and fees for courses and the state pays travel and per diem.

Contracting arrangements for approved programs appear to be fairly flexible. We were informed, for example, that if a local commander has ten or more students for a course, he can request the community college or other provider to state the total cost of training for a particular program of instruction (POI). The POI established for each military occupational specialty (MOS) can be compared to the content of the course offering in each prospective institution. If the cost of local training is established at less than $25,000, the commander does not have to go through a competitive bid process. If the amount is greater, then payment can be handled through individual training purchase orders, also circumventing the requirements for competitive bidding.

Although exact data on how many Guard members are trained under the VOTECH program by year, occupational specialty, and institution are not available, the National Guard Bureau knows the number is "in the thousands." Although they could not provide us with specific cost data, Bureau personnel felt that the National Guard saves a considerable amount of money if training is contracted to civilian institutions. They estimate, for example, that a nurse anesthetist can be trained in a civilian institution for $30,000, as compared to a cost of $75,000 for military technical training.[14] In addition to its cost savings, Bureau personnel believe that contract-provided training is often of higher quality than military training. The Army trainers, typically low- or mid-grade NCOs, have a narrow focus on training for the job, while civilian instructors have a broader educational agenda.

Army Reserves Contract Training Program

Contract training in the Army Reserves is conducted in a manner quite similar to the ARNG process, although there are some variations in their respective regulations. Civilian-provided training guidelines for the Army Reserves are provided in Army Forces Command (FORSCOM) Regulation 135.3. Money for training is allocated to the Army Reserve Command (ARCOM), of which there are about 25 nationwide. Responsibilities for determining the supply of civilian opportunities in the area and the effectiveness of a particular

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[14]These cost savings are due primarily to lower travel costs and the fact that full-time military compensation and benefits are not paid to guardsmen who are trained at or near their hometown.

program rest with the local reserve commander, who must be responsive to the ARCOM.

Our Department of the Army respondents, speaking about the Army Reserve, agreed with the ARNG that civilian-provided training is a cost-saver. As they see it, "export training" is cheaper primarily because it reduces travel and trainee costs during the training period. However, they do not gather data to systematically track costs or gather other information for evaluative purposes. The regulations do not require data reporting, in keeping with the belief in a decentralized choice system and a desire not to generate reporting requirements. Thus, although the regulations include a data format and data gathering guidelines, the data, if gathered at all, are not sent to a central data facility or other location. There is little incentive, then, for ARCOMs to gather any data at all, let alone to analyze it.

While the Army Reserve is generally positive about civilian-provided training, it also acknowledged three potential problems: equipment mismatches; training is not conducted under wartime conditions; and not all MOSs can be served. As in the ARNG, civilian-provided training is most common in medical fields. In Sec. 4 we discuss a program at St. Phillips College in San Antonio for training practical nurses.

REVIEW OF RECENT LEGISLATION IN SUPPORT OF CIVILIAN-PROVIDED TRAINING

The notion that the civilian sector might be a viable provider of military technical training has been advanced before. The most important effort before the current legislation was the Skilled Enlisted Reserve Training Act (SERTA), which eventually failed in Congress. A closer look at legislative efforts reveals a complexity of issues that will affect any future, widespread adoption of civilian-provided technical training.

The SERTA legislation (H.R. 5583) was introduced in congressional session in 1982. Its purpose was to amend Title 10, United States Code, to establish a program to provide vocational training assistance to individuals in technical programs leading to associate and community college degrees. In return, these individuals would commit to enlisted service in the Armed Forces. In the SERTA plan, DoD would subsidize up to two years of full-time schooling and, upon completion of training, could promote the enrollee to a military pay grade between E-3 and E-8. SERTA's proponents argued that the measure would ensure a cadre of technically trained personnel, qualified to op-

erate and maintain an increasingly sophisticated array of weapons and other advanced technologies. At that time, the services were reporting shortfalls in recruitment of personnel able to fill technical positions (Bennett et al., 1983).

Advocates cited several advantages of the SERTA program for the military. First, it would attract more individuals into the services by (a) allowing them to serve their country while pursuing their technical training in their home community and (b) offering promotion to a noncommissioned officer grade upon completion. Second, it would lower the military's costs of training by shifting technical training from DoD schools to local schools, thus reducing both overhead costs and the number of military instructors. One estimate projected savings at a minimum of $12 billion over five years (Bennett et al., 1983). A third argument was that the program would give the military a much better return on its training investment. In skill categories where the training is particularly long, personnel can spend up to half of their four-year enlistment in training. Shifting training to the preenlistment period would increase the productive work per initial enlistment period. One study suggested that the services' investment in an E-5 technical specialist, for example, could be paid back within 20 weeks of entry into the service, as opposed to 50 weeks for the current system (Bennett et al., 1983).

Not surprisingly, SERTA found many supporters in the community college sector, which stood to benefit most from the program. They cited the advantage of SERTA as a recruiting tool on the community college campus, which has been overlooked in recruiting schemes that focus efforts at the high school or college levels.[15] Obviously, such a program would potentially increase community college enrollments in technical fields at a time when enrollments are in decline. Third, SERTA was in keeping with an important mission of the community colleges: to offer better educational opportunities for the community and, as a result, to improve its quality of life. It was also thought that the program might foster innovation in the schools as they responded to the military's needs with new curricula, and so on (Bennett et al., 1983).

Despite proponents' arguments, endorsement by several military and educational organizations, and legislative language that gave each service some flexibility to tailor the program to its own needs, SERTA failed. A Navy-sponsored study, for example, noted the following dis-

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[15]See also R. Shavelson et al., *Potential for Military Recruiting from Two-Year Colleges and Postsecondary Vocational Schools*, RAND, N-1946-MRAL, 1983.

advantages to SERTA: possible elimination of Navy "A" schools, which would harm the Navy's ability to train during mobilization; uniqueness of military content or equipment; civilian instructors' lack of expertise needed for teaching unique Navy skills; loss of military skills or knowledge gained in the "A" school environment; lack of a feedback mechanism from the fleet to the training program; and possible loss of skills over the course of a two-year program (Copeland et al., 1983). The study concluded that while the concept of using civilian providers for technical skills training had merit, many issues remained unresolved or had not been addressed in the legislation.

Other objections to SERTA were voiced in several public hearings,[16] including a general view that the measure was an attempt by the community colleges to "take over military training" or to infuse federal tax dollars into a system with declining enrollments. Concerns were also expressed that the community college program would teach more than was necessary to carry out the military job; critics noted the colleges' lack of state-of-the-art equipment. The military questioned the validity of the cost savings projected by analysts supporting SERTA (but did not offer any figures of its own). Concerns were also voiced by educators, who saw potential threats to academic freedom and the role of the faculty in curriculum design. In the end, however, it was the military's objection that probably stalled attempts to enact SERTA.

KEY ARGUMENTS FOR AND AGAINST CIVILIAN-PROVIDED TRAINING

Previous and current use of civilian-provided training in the military and attempts to legislate such training illuminate the issues and concerns of both supporters and critics. The current environment—where Congress has authorized GAO to report on various options for using civilian institutions for technical training in the military—brings these issues forward with some urgency. This subsection attempts to summarize views from both sides and show how they affect the current debate.

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[16]See Senate Hearing 98–881, *SERTA Hearing before the Subcommittee on Manpower and Personnel of the Committee on Armed Services, U.S. Senate, Ninety-eighth Congress, First Session on S. 801, December 15, 1983* and *Second Session on S. 801, July 18, 1984*, U.S. Government Printing Office, Washington, D.C., 1984, for testimony on the legislation and its advantages and disadvantages.

Benefits of Civilian-Provided Technical Training

Supporters of civilian-provided training, both inside and outside the military, believe that such training would result in considerable cost savings. Precise numbers, however, are unavailable, even for existing programs. The ARNG, for example, was unable to provide basic information about the numbers of individuals trained in its VOTECH program or payments to individual institutions for contracted instruction. According to our respondents, the Navy's current fixed-price contract provides savings over previous cost-reimbursement contracts for civilian-provided instructors. A Navy study to compare the optimal mix of civilian and military instructors to provide Navy technical training was inconclusive: without a clear starting point of constraints and optimization criteria, it could not recommend the optimal mix. Although the analysis showed a small cost savings with civilian instructors, the Navy determined that the difference was not significant and that choice of one military/civilian mix over another must rest on other considerations.[17] As we discuss in more detail in Sec. 4, this lack of data (although not necessarily surprising) severely limits our or others' analysis of the feasibility of using civilian-provided training as a cost-saving alternative. On the other hand, it is worth noting that no one we spoke with in the course of this study believed that civilian-provided training would be more costly than military training.

A second frequently cited advantage is the capability of community colleges or other postsecondary training institutions to provide technical training. Several points demonstrate this capability. Both military and civilian studies indicate high overlap between military and civilian jobs.[18] National efforts, such as the National Occupational Information Coordinating Committee (NOICC), maintain computer databases on labor market education and include "crosswalks" that match standard occupational codes across civilian and military jobs.[19]

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[17]This analysis was reported in a memorandum (1500 Ser 1 165 of 21 Dec 84) from Commanding Officer, Naval Training Equipment Center, to Chief of Naval Education and Training (OOA), Subject: Analysis of Military-Civilian Instructor Ratios in the Naval Education and Training Command.

[18]A current Army study, for example, compared service school training with VOTECH training for each of five MOSs: utilities equipment repairer, light wheel vehicle mechanic, observation/scout helicopter repairer, aircraft armament missile system repairer, and military police. They reported a 27–55 percent match between VOTECH curriculum guides and military POI tasks. For the first three MOSs listed above, VOTECH can teach 83–93 percent of tasks.

[19]In one project with the military, NOICC developed a Civilian Training Inventory (CIVTRAIN) to provide four types of basic report to Naval Reserve training officers, including schools that offer training related to selected Reserve occupations; schools

Thus, at least on paper, it seems that public and private postsecondary institutions offer courses and job training programs with content similar to that of their military counterparts. Even in cases where the job may be unique to the military, because of either the equipment (e.g., F-16 aviation maintenance) or the special nature of the job itself (e.g., military intelligence), it can be argued that some portion of the training can be handled by civilian institutions: basic electronics, for example, comprises a core of skills and knowledge that is generically applicable to many military specialties.

A second point in support of the civilian institutions' capability is their ability to respond to the needs of a very fluid civilian job market—particularly the proprietary school sector—and the belief that competition among institutions would drive down the cost of training to the military's advantage. The ability of community colleges and other training institutions to respond to changing market demands is well documented. However, the long-held notion that these institutions operate in a competitive environment (e.g., Chance, 1988) has recently been questioned.[20]

A final point of capability concerns the philosophy and mission of public postsecondary institutions and the types of students they serve. They aim to provide job-related education and training to "ordinary" students who, by choice or lack of talent, do not pursue baccalaureate degrees (cf. Parnell, 1985). As public institutions, many view the training of military personnel—regardless of profit or other benefit—as their national duty (cf. Bennett et al., 1983).

Finally, established relationships between civilian institutions and the military are seen as an advantage to any collaborative effort between the two. Evidence of collaboration and organizational compatibility is clear from existing programs, discussed above, as well as from other cooperative training arrangements (cf. *Vocational Education and Defense Preparedness Seminar Proceedings*, 1982).

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that offer training for selected civilian instructional areas; training programs at selected schools; and lists of schools in selected geographical areas. These data can be used by training officers to contact local institutions and, as appropriate, contract for civilian training services (National Occupational Information Coordinating Committee, 1987).

[20]Grubb and McDonnell (1991), for example, examined the relationships and interdependencies between postsecondary institutions in several locations. They found a high degree of cooperation among these organizations, which tended to specialize their services to meet the needs of particular groups of students. To the extent that such cooperation exists in a locale, competitive bidding for a military contract may decrease.

Disadvantages and Barriers to Civilian-Provided Training

Most of the doubts about the feasibility of civilian-provided technical training come from the military. An important concern for the military is quality control over the curriculum and, relatedly, vays to evaluate the training provided. In practice, strategies for quality control range from complete control over the curriculum—as in the Navy program which only contracts for instructors, who teach the Navy course at Navy facilities—to control over selection of civilian-designed courses and programs—as in the Army National Guard licensed practical nurse program. In the latter cases, the military relies on several indicators of program quality, including accreditation or licensing board approval, institutional reputation, trainee feedback, or comparisons between the POI and civilian program curricula and learning objectives. As mentioned earlier, the correspondence between POI and nonmilitary course content varies considerably across MOSs.

Although comparisons of student outcomes from different training programs—in the form of tests, success on the job, and so on—would constitute a better indicator of quality, such comparisons are seldom made. *Outcome measures of training quality most often occur in third-party evaluations, as collection of such data is neither routinely required nor deposited in accessible databases.* Lack of outcome data for evaluation purposes has been explained as a desire to reduce reporting requirements in the field, but it can also be seen as a byproduct of the organizational structure. By and large, military training organizations design and evaluate training internally and depend on feedback from the field on how trainees actually perform. The regularity and frequency of this feedback varies across the services.[21] Although these feedback mechanisms may seem loose, they seem to satisfy the needs of military training organizations. Such a mechanism will not suffice, however, if civilian institutions provide the training, because there is no established feedback loop from the field to civilian providers. In the current Navy program, in fact, the contract prohibits contact between the schoolhouse and individual contract instructors to resolve problems or concerns; any communication must go through the proper chain of command, and problems are resolved by the Contracting Officer's Technical Representative (COTR). New or more flexible systems for quality assessment, then, need to be designed and implemented for civilian-provided training programs.

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[21]For further discussion and analysis, see United States General Accounting Office, *Military Training: Its Effectiveness for Technical Specialties is Unknown*, GAO/PEMD-91-4, Washington, D.C., October 1990.

Arguments about the uniqueness of military equipment and missions are also seen as a disadvantage to civilian-provided training. Providing the civilian institutions with specific equipment seems feasible in some circumstances, but this would require more overhead for the arrangements that must be made to procure, move, maintain, or monitor use of the equipment in the civilian setting. With respect to mission, the services like to point out that although the broad mission of each appears similar, specific vocational needs of a service or individual vary widely at the local level. For this reason, cooperative efforts must be identified and implemented locally (*Vocational Education and Defense Preparedness Seminar Proceedings*, 1982). Note that this situation can be a barrier to policies that tend to centralize civilian-provided training decisions away from the local commander or to standardize regulations across the services. It suggests that decentralization of decisionmaking or other aspects of program management would contribute to successful implementation of many civilian-provided training options.[22]

A fourth concern with civilian-provided training is the elimination of "soldierization"—the inculcation of military culture and bearing that occurs in the normal course of service. In preaccession programs, this concern is voiced as the need for discipline or some reminder that the student is a service member. In nonprior-service lateral entry cases, critics worry about morale problems if outsiders are brought in at higher pay grades, particularly if they will supervise soldiers who entered and progressed through the system by normal means. Even the current Navy program, with its civilian instructor cadre, has considered placing Navy petty officers in the classrooms just to emphasize the military presence. Still others question whether lack of "soldierization" will influence job performance, attrition, career progression, and so on. The current Air Force study on contract technical training included an analysis of "blueing" and found no ill effects that could be attributed to lack of "soldierization."

Another perceived drawback to civilian-provided training is the possible erosion of the current training system. This erosion can occur through loss of control over some aspects of training or loss of resources: the dollars allocated to training will be distributed to more pockets. Recent cutbacks in the defense budget have already closed

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[22]On the other hand, one should not lose sight of the fact that any far-reaching decisions about this training option for the military must be made in the context of many types of training options and broader manpower concerns, such as readiness, accession, and attrition. A centralized, top-down view is needed at some level to assess tradeoffs among all these needs.

some military bases and given each military organization more incentive to hold on to what it has. A related, perhaps more legitimate, aspect of this issue concerns training in times of emergency or mobilization. The current system stands ready to train and deploy soldiers as needed. There is some question whether emergency training needs can be met without this infrastructure and whether civilian institutions can be depended on.

SUMMARY

The military has a long history of using civilian providers for various kinds of training and has experimented with a variety of programs that included such training as a substitute for military technical training. We also see that local systems of postsecondary education and training institutions form a network of potential providers who seem able to provide relevant training in selected occupations. Of these, the community colleges have been most aggressive in arguing for arrangements between these institutions and the military; many have contracted with the military to provide substitute technical training.

We also see failed legislation and programs and a fair amount of controversy. Unfortunately, both the military and the civilian community lack data to systematically evaluate the feasibility of civilian-provided training on cost, quality, or other grounds. As a result, debate and opinion often substitute for evidence.

Having viewed this history and background in broad terms, in the next section we focus on frameworks for evaluating different programs and closely examine the variables that will affect choosing among different civilian-provided training options.

3. THE CONCEPTUAL FRAMEWORK

In the previous sections, we discussed the ways in which utilizing civilian training might benefit the military training establishment. For example, proponents of civilian training argue that the availability of an extensive network of training organizations staffed with experienced instructors offers a valuable opportunity for the military to avoid the duplication of training facilities as well as alleviate skill shortages. In this section, we develop a conceptual framework that provides a way to sort out the multitude of effects that different program designs might have and help evaluate claims made for—or against—civilian-provided training.

The selection of one particular training program design over competing alternatives should be based not just on the initial costs of producing a given number of occupationally qualified recruits; it should also take into account how long the military has access to the skills and how much it costs to maintain them. As a way of capturing both of these aspects, we suggest a single measure of trained man-years (TMY) to calculate the output associated with alternative training programs.[1] TMY is based on the expected number of enlistments and the expected life cycle over which that cohort is occupationally qualified. The best use of training dollars would then entail selecting the option that minimizes the present discounted value of the stream of costs for each option that produces a given level of TMY over the relevant time horizon.[2] Below we discuss how alternative program designs may affect the production of TMY; then we address the costs of producing trained manpower.

THE PRODUCTION OF TRAINED MAN-YEARS

The total number of man-years available in a particular occupation from a particular enlistment cohort will depend on the number of en-

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[1]A trained man-year refers to the value of an individual's services that are available to an employer for one year after the individual has completed training. In the case of the military, if an individual completes a four-year term of service, but is in training for one year, that individual contributes four man-years of service but only three *trained* man-years of service.

[2]The model is based on the framework discussed in Richard Buddin and J. Michael Polich, *The 2+2+4 Recruiting Experiment: Design and Initial Results*, RAND, N-2187-A, October 1990, but also considers the effects of varying in-service training times as well as the effects of altering the value of military training in the civilian sector.

listments, attrition, the length of the initial obligation, and reenlistment propensity. The number of *trained* man-years will depend additionally on how much time the military spends training the individual during his or her tenure in the military. Most of these factors can be affected by the choice of training strategy (see Fig. 3.1).

The number of enlistments, attrition, and reenlistment propensity result from decisions by individuals to join or leave the service. Stating the concept in the language of economics, decisions to join or leave depend on the utility received from military service relative to civilian alternatives. That utility depends in turn on many factors, including nonmonetary returns, monetary compensation in the form of military and civilian pay and benefits, as well as the expected returns to training in the civilian sector.

Using civilian training in the ways discussed in Sec. 2 may influence an individual's assessment of the relative utility associated with military service, for several reasons. First, such training may be more valuable in the civilian sector than current military training. Under this assumption, and assuming the value of a military career remains unchanged, then the expected monetary returns from postservice civilian employment would increase. Furthermore, if military service
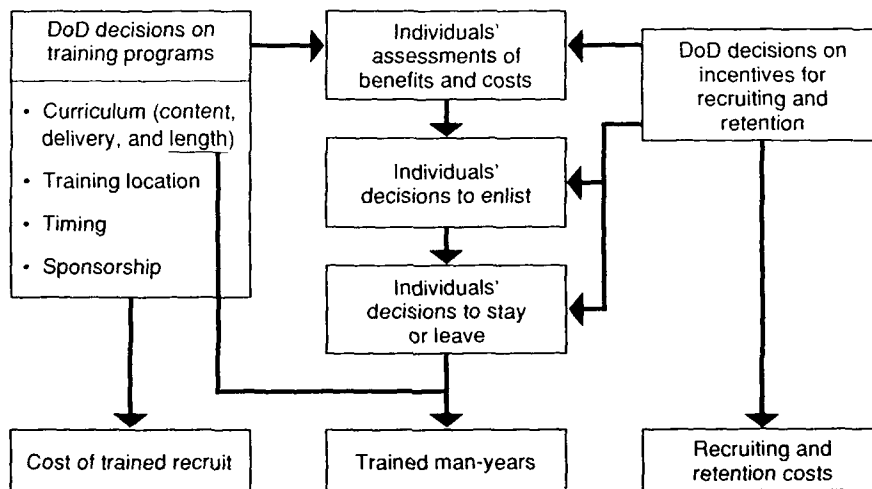
Fig. 3.1—Conceptual Framework for Factors Determining Trained Man-Years and the Costs of Producing Them

becomes a means of obtaining valuable training, that would expand the pool of potential recruits. Second, using civilian institutions to provide local training modifies the costs of military service from the recruit's perspective. Third, altering the timing of the various training phases, i.e., reversing the order of IST and recruit training, may affect the net return to remaining in the service. Finally, having recruits pay some portion of their training prior to entry would substantially affect the benefits associated with military service. Each of these avenues of effect is discussed in more detail below. (See Table 3.1 for a brief summary of what follows.)

Curriculum Content, Delivery, and Length

A training program that uses civilian coursework and training techniques may increase accessions by enhancing the postservice value of military training. For some time, DoD has recognized the value of linking military training and experience to civilian occupations. The intention is to encourage enlistment by emphasizing the general application of the training to the civilian sector. For instance, the Accession Policy Directorate, OASD (FM&P), sponsored the DoD Crosswalk Project in 1980. The crosswalk gives information on how experience in military occupations can be used in the civilian sector, and is considered a valuable recruiting tool. Similarly, the Air Force grants credits for training experience through the Community College of the Air Force, thereby making Air Force training and experience transferable to institutions in the civilian sector. In addition, DoD sponsors a program through the American Council on Education for obtaining credit for military training and experience. Combined with the popularity of the education assistance packages offered by the services, a program of military training that incorporates training at civilian institutions may increase the pool of qualified applicants by increasing the value of military experience in the civilian sector and, hence, the attractiveness of military-sponsored training.[3]

Consider the length of in-service training. First, the military can extend the period of the initial obligation dependent on the length of training. Second, the military can shorten the amount of training during the enlistment period by either substituting preenlistment training and experience for military training or altering the content

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[3]For instance, it is reported in Office of the Assistant Secretary of Defense (1990) that "30% of Service members pursue voluntary education while in the military, with about half of these people participating in the Department's tuition assistance program."

Table 3.1

Summary of Potential Effects of Training Program Characteristics on Trained Man-Years and the Costs of Producing Them

Program Characteristic	Trained Man-Years	Potential Implications for:	
		Cost of Producing Trained Recruit	Cost of Recruiting and Retaining Recruits
Civilian curriculum content and delivery	INCREASED ENLISTMENT by enhancing training value postservice; DECREASED RETENTION by raising costs of staying relative to civilian employment	LOWER instructional and curriculum development costs; HIGHER costs due to some screening and monitoring	LOWER recruiting costs; HIGHER compensation costs to promote retention
Local training	INCREASED ENLISTMENT AND RETENTION, especially for reserves, by reducing costs of military service; for actives, SOME ENLISTMENT DECREASE from increased costs of leaving community, where contacts established	LOWER station change and student compensation costs; HIGHER costs for extensive screening and monitoring	LOWER recruiting and in-service compensation costs, especially for reserves; for actives, partially offset by SOMEWHAT HIGHER recruiting costs
Preenlistment training	DECREASED RETENTION by raising costs of staying as training cost is sunk; INCREASED LENGTH OF SERVICE following training	LOWER student compensation costs; HIGHER refresher training costs and recruit screening costs	HIGHER in-service compensation costs to promote retention
Recruit self-sponsorship	DECREASED ENLISTMENT AND RETENTION by reducing net returns to military service; DECREASED ENLISTMENT by raising cost barrier to joining	LOWER instructional delivery and student compensation costs	HIGHER recruiting and in-service compensation costs

NOTE: This table is for quick reference and should be read in conjunction with the explanations and caveats given in the text. The potential effects cited are those most directly related to each program characteristic, taken in isolation from the others.

and delivery of the current training. Either of these options will increase TMY.

With respect to length of military service, though, individuals who enter the armed services primarily to receive civilian training are not likely to become career soldiers and will commit to the least amount of time possible. Although a similar phenomenon is observed in lump-sum bonus experiments, the effect may be larger in the civilian training case because the individual has to leave the service to obtain the increased returns. To counteract any decrease in the length of service obligation, the military could specify a minimum period of enlistment upon occupational qualification that allows the military to recoup its training investment but does not discourage enlistment. The appropriate length of commitment would have to be empirically determined.

Training Location

The availability of an extensive geographic network of public and private training institutions opens the possibility of widespread local training. Varying training location, i.e., providing local training, will affect TMY. Assuming that training quality and length and trainee compensation remain as they are now, allowing recruits to train near their hometowns will reduce the training-related costs they bear. That is, if recruits prefer staying in their hometowns to spending time away, the returns associated with military service would increase relative to the current system. Also, if training provides information about local employers and an opportunity to develop contacts, then local training may also increase the value of training received in the military, thereby increasing the propensity to enlist. On the other hand, there may also be some decrease in utility for those recruits who were interested in the military experience offered at a central training facility.

We expect that the value of local training will be higher for the reserve components than the active for the reason that reserve duty is generally a second "job," akin to moonlighting. There will thus be costs associated with IST if the reservist must interrupt a civilian job for some length of time. These costs include forgone civilian income if, as is often the case, the employer requires the reservist to take vacation time to attend IST or pays only the difference between civilian and military pay. In addition, reservists may be indirectly penalized through reduced civilian job advancement. As a result, Grissmer et

al. (1989) found that forgone civilian earnings for younger reservists could amount to half of gross reserve pay. Such monetary penalties may be partly responsible for the high attrition experienced by the reserves, e.g., 19 percent during training in the Army National Guard (Grissmer and Kirby, 1985). Furthermore, Grissmer, Buddin, and Kirby (1989) found a 25 percent increase in Guard attrition potentially attributable to longer training periods—including time at the National Training Center—that have been instituted to augment readiness. Local training may thus be particularly valuable to reservists and may increase TMY available to the reserve components if it allows personnel to miss less work on their civilian jobs than they would if centrally trained.

Timing

Independent of the value of civilian-provided or locally provided training, the timing of training, i.e., whether it occurs before enlistment (and recruit training) or after, will influence the production of TMY in two contrasting ways. First, from the recruit's perspective, reversing the standard sequence of training means that the gain from training is realized up front; hence, the cost, or disutility, of remaining in the military increases. (Obviously, this is not always the case, i.e., for many, recruit training is an integral part of the military experience.) Hence, one would expect to see a higher degree of attrition and a lower level of TMY under a preaccession program than is currently experienced. Second, for a recruit trained before enlistment, the length of in-service training necessarily falls; so if the total military obligation remains the same, the time over which a trained individual is available to the military increases, and TMY will increase as well.

Sponsorship: Who Pays for Training

If compensation remains constant, shifting some share of training costs onto the potential recruit has the effect of reducing the returns to military service, which will lead to lower enlistment as well as shorter lengths of service obligation. For instance, the services' lateral entry programs shift the entire responsibility for financing training to the recruit but accelerate the pay grade profile in order to attract skilled candidates.

A second issue associated with sponsorship arises because individuals are generally unable to borrow against the value of their future earnings without government intervention, e.g., federally insured student loans. The amount of the assistance may or may not be sufficient to

allow the individual to undertake training. The inability of some potential recruits to finance a given portion of their own training could reduce the pool of applicants.

Omissions from the Conceptual Framework

Although we believe the conceptual framework presented here offers useful support for evaluating training strategies, it does not cover all aspects of TMY production. One obvious omission, already mentioned, is that the effects of the variation in training quality on productivity beyond some minimum proficiency standard are not considered explicitly here. However, differences in productivity over time should be taken into account when considering a program that could induce recruits to alter the length of time they spend in the military. Several studies have suggested developing learning profiles that measure the increase in productivity over time relative to the ability of a newly trained recruit.

In addition, we do not address the potential value to the military of increases in an individual servicemember's productivity that may result from being a military instructor. If large portions of military training are turned over to civilian institutions, fewer servicemembers will have experience as instructors.

THE COSTS OF PRODUCING AN INITIAL-SKILL-QUALIFIED RECRUIT

We have described how the training program design can affect the production of trained man-years mainly by altering the potential recruit's short-run costs of obtaining training as well as his or her long-run return. As shown above in Figure 3.1, the choice of training strategy affects not only the production of trained man-years but also their cost. In this subsection, we describe those effects according to which of three major categories they fall into: training, screening, or monitoring (see Table 3.2).[4] While the categories of costs apply regardless of who trains, the amounts may vary with the provider.

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[4]Although the issue of costing training may appear relatively straightforward, it is actually quite complex. In our discussion of the issues surrounding the training costs associated with various alternative training options, it is not our intent to imply otherwise.

Training Costs

In Table 3.2, variable training costs are broken down into student-related costs and instructional delivery costs. A large portion of the costs of sending a recruit through IST are associated with his or her relocation and upkeep. Student-related costs should not be affected by choice of military or civilian provider, other things equal. However, as described in Sec. 2, other things are not often equal when civilian training is substituted. Training location, for example, could have important cost implications. Relocation costs and living allowances are related to the distance that the recruit must move as well as the cost of living in the vicinity of the service school. Thus, training in the recruit's hometown or near his or her first duty assignment could save money by either reducing or eliminating relocation costs. The timing of training could also be important, because

Table 3.2

Categories of Costs Entailed in Producing
an Initial-Skill-Qualified Recruit

I.   Training-related costs
A. Variable training-related costs
1. Student-related costs
a. Pay
b. Benefits
c. Allowances (including change of station, etc.)

2. Instructional delivery costs
a. Instructor compensation
b. Materials and supplies
c. Operating and maintenance of equipment and facilities

B. Short-run fixed training-related costs
1. Overhead
2. Curriculum development
3. Facilities
4. Equipment

II. Screening costs
A. Recruitment and placement
B. Selection of trainers

III. Monitoring costs
A. Performance evaluation of students
B. Performance evaluation of trainers

students receive full pay after they enlist. A program that offers pre-accession training gives the military the option of paying a stipend in lieu of full compensation and benefits. For reservists, the amount of compensation depends on where the training occurs. For instance, if the training is locally obtained, then no increase in compensation over the regular reservist salary is provided. On the other hand, the reservist who attends training at a service school receives full duty pay and allowances.

The other training-related costs that can be altered over the short run under alternative program designs are the costs of instructional delivery. Substituting existing civilian facilities and staffs for military may give rise to variable-cost savings. Costs may be less because of the availability of publicly subsidized training such as public postsecondary institutions. However, the military's access to this training will depend on the available capacity at the institution. Alternatively, training may be cheaper because of competitive pressures among providers in the civilian sector to adopt the most up-to-date curricula and delivery systems.[5] The use of a professional staff of instructors may also contribute to lower costs because, unlike the military system of three-year teaching assignments, staff are not constantly being taught to teach.

Short-run fixed costs to the military include the costs of overhead, curriculum development, facilities, and equipment. These costs are fixed because they are borne regardless of small changes in operations such as the number of students or the number of classes taught in a particular subject. Alternative program designs could affect these costs. For instance, offering training at more than one location would require the duplication of training facilities and equipment. Therefore, the option of using existing civilian facilities would lower the military's costs for a local training program. The military could also save on fixed costs if civilian training were used to meet training slot shortages during temporary end-strength increases.

Civilian organizations could also be used in the area of curriculum development. While curriculum development costs for existing military courses are largely fixed, i.e., the costs have already been absorbed by the military, new curriculum development or major overhauls of existing curricula could perhaps be done more economically

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[5]Of course, not all institutions will be subject to competitive pressures to maintain enrollments. Schools in less populated areas or publicly funded institutions may not be as motivated as other schools to provide training efficiently.

using outside providers.[6] First, in many cases, the curriculum already has been developed, and second, there may be organizations that specialize in curriculum development and can provide it at a lower price than can be done in the military.

Screening Costs

Redesigning the current program to rely more heavily on civilian institutions raises two issues. First, in deciding where to place new recruits, how do you inventory their existing skills if they receive their training prior to accession? Second, if you decide to use civilian providers, how do you select the "best" candidates?

Under the current program, recruits rarely receive credit for experience or training they may have obtained prior to military service. The lack of credit may reflect the costs of testing individuals to determine what skills they have already acquired and placing them at the appropriate level of training. If the military expands the use of preenlistment training, then testing, with its attendant costs, will have to be implemented. The increase in costs will depend on the number of individuals receiving civilian training prior to military, the number of occupations, and the complexity of the skills tested (which determines the complexity of the tests).

In order to select an outside establishment to provide training, information must be gathered about its ability to provide a given quality of training. In general, the costs of screening will be positively related to the complexity of the goods or services being purchased, the number of contractors that must be evaluated, the size of the contract to be awarded, and the location of the providers. Under certain circumstances, it may be prohibitively expensive to contact each provider directly and evaluate the quality of its program by observing the instruction. For instance, a program that allows military personnel to obtain training in their hometown would mean extremely high costs to evaluate the training providers individually. For such a decentralized program to be effective, collection of prior information about the school would be desirable. Although existing accreditation may be a useful proxy of an institution's quality, such information is often out of date, and standards vary widely across regions. A more systematic, timely method for the military to use to evaluate schools prior to enrollment could be devised. This could be based on two types of information—measures of learning, e.g., student course completion rates

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[6]Examples already exist: The Navy has recently expanded its use of contract trainers to develop advanced "C" school courses.

or achievement on standardized tests, and measures of labor market success, e.g., placement rates or job tenure and earnings.[7]

Monitoring Costs

Monitoring costs refers to the costs associated with evaluating the quality of the training. In general, monitoring costs will be positively related to the complexity of the course content, the number of courses, and the number of training sites as well as the distance to them.

However, it is not a simple task to identify all of the costs associated with monitoring the quality of military training, let alone anticipate all the costs that might arise with outside providers. The military maintains the quality of its own training by controlling the curriculum, evaluating course achievement, and monitoring performance over time. The quality of training is evaluated on the basis of end-of-course exams and feedback obtained from the field on either a formal or informal basis. In other words, there is a recognition that later job performance may be only loosely related to success in training, although each of the services approaches the issue differently.[8]

A method for evaluating the quality of training needs to be devised—first to select from among potential training providers, and second to monitor the quality of training being delivered. The military might consider performance-based contracts, used now in some civilian-sector training programs, as a way to minimize monitoring costs. For instance, California's Employment Training Panel (ETP) relies exclu-

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[7]Labor market criteria measure the value of the training to employers and may be particularly appropriate for evaluating the track records of civilian training programs a priori. While this information would be costly to collect independently, there is an effort under way to collect the data for job training program participants using student records in conjunction with unemployment insurance data (Hoachlander, 1990).

Another method of evaluating institutions entails examining the resources they have available. The relationship between training inputs, relative input costs, and output has been examined extensively in the economics of education literature. This approach, known as the "production function approach," has been used primarily for policy purposes in evaluating efficiency in secondary schools. The analyses have mainly concluded that traditional measures of inputs such as student/teacher ratios and expenditures have little or no impact on output. However, all of the findings are laced with caveats concerning not only the choice of output measures, but also input measures, and the manner in which they interact. (See Hanushek (1979, 1986) and Murnane (1987).)

There has been little effort made in this direction for vocational technical training, even though the outcomes are more concrete than those of secondary schooling. However, the diversity of training providers, ranging from proprietary institutions serving Pell grant recipients to community colleges, may also make it difficult to identify the operative objective function and set of constraints facing each institution.

[8]See United States General Accounting Office (GAO/PEMD-91-4), 1990.

sively on fixed-fee performance contracts to retrain already skilled workers in other technical skills (Hoachlander, 1990). The training agency is reimbursed at a fixed amount per trainee only if the trainee successfully completes the training and is employed by a single employer for 90 days. There are no partial reimbursements for trainees who fail to complete the training. The lesson from ETP is that contractors have been willing to accept placement and retention criteria.

Some Caveats Concerning Cost Assessment

We want to emphasize that comparing training costs between alternative program designs is not as straightforward as it may appear. First, the marginal costs will be driven by the size of the substitution under consideration. For instance, if only a small number of students relative to the normal load in a particular occupation receive civilian training, then the savings may be quite small and will depend on how operating costs are changed. Operating-cost savings would arise largely from reassigning trainers to some equally valued alternative function.

On the other hand, the substitution may involve eliminating whole courses or programs at central military training facilities. Then the savings will depend on the alternative value to the military of the facilities and equipment it would have used in the training. If those resources are simply mothballed, then the savings will only reflect reduced operating costs. Larger savings would accrue if the facilities and equipment were used in place of facilities and equipment that would otherwise have to be procured for the military.

Another problem associated with assessing the costs of the different alternatives is the difficulty of identifying course-specific costs at the service schools. The Army's Training and Doctrine Command collects course costs on a very detailed basis, breaking out direct from indirect costs. However, many of the reported costs are derived from cost estimating relationships that may be out of date or based on simplistic assumptions. For example, it would be extremely difficult to identify the true costs of curriculum development and equipment costs when the actual time spent in support of a specific course has not been recorded. The Army's reports of operations and maintenance costs are considered to be fairly accurate, though. They may be useful at least in establishing a range of reasonable costs.[9]

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[9]There is a current effort by RAND to identify and evaluate the underlying resource relationships used to develop the Army's Training and Doctrine Command ATRM 159 Course Costs Per Graduate Reports.

In addition, costs should not be compared directly without considering the type of resource constraints that may be facing the Department of Defense over the time period that civilian contracting is being considered. For example, if end-strength authorizations are below what DoD would prefer given the size of its budget, then the services may want to maintain military instructor positions even in cases where there is some cost advantage to replacing them with civilian providers.

Summary by Program Characteristic

We have found it useful to organize our discussion of TMY costs by cost category, as our emphasis has been on programwide costs to the military. To better understand how costs may be perceived by the individual and how those perceptions may influence the costs of military recruiting and retention incentives, we briefly discuss the likely cost impacts under the alternative program design characteristics listed in Table 3.1.

Curriculum Content, Delivery, and Length. As discussed above, there may be some cost advantages associated with using civilian curriculum and delivery techniques. On the other hand, if the civilian curriculum has the effect of increasing expected postservice earnings, then recruiting and student compensation costs could be reduced without lowering enlistment. However, the costs of keeping the trained manpower will rise if greater compensation incentives must be provided to induce reenlistment.

Location. A program of local training can reduce change-of-station costs and associated living allowances substantially by providing training near a recruit's home prior to entrance. However, there are attendant risks that may increase costs associated with maintaining a given level of trained man-years. In particular, local training may raise the costs of leaving the community by providing more information about community opportunities and allowing more time for the development of relationships with civilian employers, etc. Similar compensation issues arise for the reserve components. The compensation differs dramatically between duty pay usually received for IST and regular reservist pay that is provided to reservists obtaining local training. We discuss this aspect in greater detail in the next section.

A program of local training, though, requires that outside providers be initially screened. The costs associated with screening outside

training organizations will depend on the number of institutions under consideration and the complexity of the program.

Timing. Two costs are potentially affected by offering training prior to enlistment. First, student compensation costs are more flexible under a preaccession training program and may be reduced. Secondly, because of the delay between training and first duty assignment, there may be considerable skill decay that would then require refresher training. Hence, any cost savings that might be realized from a preaccession program could be at least partially offset. The costs of training then would depend on the degree of refresher training that would be required.

Sponsorship. Many recruits enlist as a way of receiving training that they are unable to finance themselves. The degree to which the costs of training can be shifted to the recruit will depend on how the training costs affect the net returns associated with military service.

4. EVALUATING ALTERNATIVE PROGRAM DESIGNS

We have described how the characteristics of alternative training strategies may be designed and what the cost impacts of those strategies might be. However, most alternatives will differ not just in one characteristic but several. For instance, a reserve component program of local training differs from the current system in terms of location and curriculum. A lateral entry program will differ from the current program in terms of curriculum, timing, and sponsorship. In this section, we discuss past, current, and proposed training alternatives that specifically employ civilian training establishments. We discuss what factors need to be considered when evaluating whether or not the option is cost-efficient in the sense of producing a given level of trained man-years for the least cost.

Under the broad rubric of active component training, we consider several preaccession options, including expanded lateral entry, sponsored enrollment at civilian institutions, and contract training of military curriculum at designated locations. Postaccession active programs include contract training at central training facilities.

For the purpose of this discussion, there are two major differences between the active and reserve components. First, the part-time nature of the reservist's service significantly increases the opportunity costs associated with training at a central training facility relative to an individual on active duty. Second, reserve military occupations have more in common with civilian occupations than active component occupations do, so here there is a somewhat greater overlap between civilian and military curricula. As a result, for the reserve components we focus primarily on programs that use civilian curricula. These may be offered either locally or near central training facilities.

PREACCESSION TRAINING FOR THE ACTIVE COMPONENT

We consider two preaccession alternatives—expanded lateral entry and sponsored preenlistment training. As shown in Table 3.1, the principal risks of preaccession training are the potential for increased refresher training costs and greater attrition due to recruits' increased opportunity costs of staying in the service once the training investment is made. Potential gains to the military include increased

length of service outside of training and the anticipated greater efficiency of civilian training. (Again, the latter gain can be realized only if military training personnel can be gainfully reassigned and training facilities gainfully used.)

Expanded Lateral Entry

Lateral entry programs represent one end of a spectrum of civilian-provided training options ordered on the basis of degree of military control. Under lateral entry programs, the individual is responsible for obtaining training, i.e., with no military sponsorship and, typically, no guidance in selection of institution or coursework. Because they carry increased attrition risk, lateral entry programs could be expanded only by increasing the amount of resources devoted to recruiting and/or accelerating the pay grade profile. For instance, more recruiting could be done at either community colleges or vocational and technical training centers. Recruiting directly at postsecondary civilian institutions is likely to yield a population that is younger and of higher quality than the lateral entrants who go to the nearest recruiting station. As mentioned in Sec. 2, recruiters do not have experience in the postsecondary recruiting market, so recruiting costs will probably rise, at least initially. Screening and placement costs would also increase, since more information about a prospective recruit's knowledge and background must be gleaned than under the current system. Whether the increased recruiting effort would result in a large enough increase in accessions and resulting TMY to justify the program is an empirical question that depends on supply conditions as well the alternatives being considered.

The Navy's Direct Procurement Petty Officer (DPPO) Program was undertaken in support of its proposed Lateral Entry Accession Program (LEAP). As discussed in Sec. 2, this program was deemed to be cost-effective. This judgment was based on the fact that the increased salary awarded a DPPO was less than the costs of sending a recruit to "A" school. However, various Navy personnel told us that the later performance of the DPPO lateral entrants was less than that of others who had received Navy training. There was no further evaluation of the program to verify the outcome either way. A more complete analysis would have relaxed certain assumptions, tracked the participants for a longer period, and enumerated all of the cost implications. For instance, recruiting costs were assumed to be equal in the two groups, which, as noted above, is probably incorrect. In addition to fully identifying the costs of recruiting trained individuals,

further effort should have been made to evaluate the population in terms of expected length of service, attrition, etc.[1]

Sponsored Preenlistment Training

A second preaccession training alternative is to subsidize a recruit's civilian-provided training. The degree of sponsorship can range from a modest stipend to complete support. In general, the major difference between this category of training programs and lateral entry programs is that the services have greater control over the choice of institution, curriculum, and other inputs into the training process. However, the training is generic in the sense that it is not tailored to military specifications and the individual enrolls directly at the institution.

We can infer from the conceptual framework of Sec. 3 that enlistment—and TMY—should increase if civilian training is more highly valued than military training, *ceteris paribus*. The actual effect on enlistment will also depend on the size of the stipend offered to the individual. If the stipend is low relative to the salary and benefits that would be received during in-service training, then the person may or may not prefer the civilian training program.

TMY would also be affected by the degree to which in-service training time is reduced, which depends on the match between civilian programs and military training. On the other hand, if the program requires a long time commitment, e.g., two years to complete the equivalent of an Associate of Arts degree at a community college, then attrition out of the program will likely be higher than under the current system. Again, reenlistment will decline if the program draws individuals whose principal motive for joining is to obtain financial resources to stay in school. Finally, sponsored individual training implies an interest on DoD's part in screening the institutions involved, which can be costly. An analysis of the program would thus involve estimating the costs of the stipends, administration, monitoring, and screening costs required to produce a given level of trained man-years.

The only ongoing program that comes close to permitting preenlistment training at civilian institutions is the Navy Technical Scholar-

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[1]Preliminary results from a study by the Air Force's Air Training Command suggest that individuals trained before accession and assigned directly to duty perform as well as those receiving training at the Air Force training schools. However, occupations that qualify for direct duty assignment are low-skill-level occupations, and the results should not be generalized to other occupations.

ship Program. However, as already discussed, the participant must still attend Navy IST. But it should be noted that even a stipend of full pay and benefits has proved to be insufficient to attract a large number of students to the program. The NTSP experience suggests that the services may also consider locking individuals into contracts either prior to or immediately following high school graduation rather than after they have already entered a postsecondary degree program, on the theory that individuals able to continue on the education track have already made financial arrangements to cover the costs of schooling.

Preaccession Contract Training for the Active Component

An alternative to sponsoring individuals within the general student population is to negotiate contracts at the course level. In this case, the civilian institution may employ a different curriculum, delivery, or staff for its military trainees. Under a contract arrangement, the costs of altering curriculum or delivery will obviously depend on the degree of modification and the availability of capacity and staff to provide additional training.

Again, questions of screening and monitoring arise, with their associated costs. However, because special arrangements are made for training the recruits, potential providers might include types of organizations without formal school affiliations, such as equipment contractors, training consulting firms, etc. From such providers, "track record" information about prior students might not be available. But since the military would be contracting with institutions rather than supporting individuals who make their own choice of school, the training will likely be offered at fewer places, and more individuals will be trained at any one location than in the previous alternative. If so, then the returns to expending resources to compare and evaluate potential suppliers will be higher.

Some providers may attempt to skimp on training quality. Incentives to do so depend on the size of the contract, the number of students being trained, and the complexity of the skills being taught. The military may want to consider performance contracting (see Sec. 3) as a low-cost way of insuring quality.

We identified only one program in the military that utilized preaccession contract training. The training was carried out under Phase II of the Direct Procurement Petty Officer Program in the mid-1970s. Currently, both the Army and the Air Force are considering the use of preaccession contract training. The Air Force conducted its own sur-

vey of potential civilian suppliers, and the Army hired a consulting group to look at VOTECH institutions. Both studies concluded that civilian contract training is economical. We discuss each initiative below.

In Phase II of the DPPO experiment, personnel were recruited upon graduation from high school and sent to one of two civilian technical schools for one school year. Schools were selected on the basis of their proximity to Great Lakes and Treasure Island, where shipboard indoctrination courses would be conducted. The teaching staff at one of the schools consisted of former Navy instructors. Their instructional methods and materials were the same as those they used earlier as instructors at Electronics "A" school. Quality control was maintained by technical representatives in the school who observed student performance in the classroom, monitored test results and attrition, and decided which students should be held back. The program was judged cost-effective in terms of comparative student proficiencies and costs of instruction, but doubts have been expressed as to the ability of the participants to progress satisfactorily in their subsequent careers.

An analysis consistent with the TMY approach would have considered the recruit's whole service career in terms of attrition, reenlistment, and length of training. In addition, although the initial instructional costs were lower, the Navy would need also to consider the costs of insuring the quality of the training and the alternative value to the Navy of training facilities, equipment, and instructor time.

The Air Training Command (ATC) Contract Technical Training Study Group is considering a preaccession option that employs contractors to provide IST at designated locations prior to enlistment. Training would occur at institutions near the military entrance processing stations (MEPS), although there is still some discussion over whether or not the training will be customized or use existing Air Force curricula.

Savings are anticipated on the basis of replacing the pay that recruits receive during training with a lower stipend of $150 per month while a potential recruit undertakes the training program. The ATC has concluded that at a stipend of $150 per month, even a 40 percent attrition rate from the program would not increase costs over the current system.

It is not clear from discussions with the Air Force what assumptions are made about the impact of the stipend on accessions or reenlistment. As discussed above, the reduction in compensation is likely to

have a negative impact on accessions. The magnitude of the reduction will depend on the civilian demand for the occupations in which recruits train and any increase in utility associated with the program if, for example, the training is provided close to the recruit's hometown.

The Army is also exploring the potential use of civilian training providers, although the focus is primarily on the use of public VOTECH centers. In U.S. Army Training and Doctrine Command (1991), Engineering and Economics Research Systems (EER) contacted a set of vocational schools in four different states to find out what they would charge to conduct IST in five selected occupations. The report concluded that it was feasible and cost-effective to replace service school training with VOTECH training for the occupations under consideration. In addition, the study asserts that the greatest savings are associated with recruiting prospective soldiers from post-secondary VOTECH schools or directly from secondary schools that provide VOTECH training. Next most cost-effective was the Delayed Entry Model, in which recruits from the general population would be placed in a Delayed Entry Program for the time required to complete a VOTECH curriculum related to a specific occupation. The least cost-effective was a postaccession model that included local area VOTECH training.

Service school costs per selected occupation were estimated on a per-student basis under alternative assumptions regarding the proration of fixed costs as a way of reflecting errors in the attribution of fixed versus variable costs. These estimates raise several issues. First, the relevant costs are the marginal costs as opposed to average costs, and those costs will depend on the size of the substitution under consideration. Hence, computing only the current per-student costs may misrepresent the relevant cost comparison. In addition, it is not clear what assumptions are made about the costs associated with selecting those institutions or the costs of maintaining quality. In addition, no discussion was included in the report about the effect of the program on the availability of trained manpower, as in the TMY model. This information should be estimated in evaluations of training alternatives if all of the costs of a program are to be considered.

POSTACCESSION TRAINING FOR THE ACTIVE COMPONENT

In this subsection, we examine the probable effects of using civilian establishments to train at the existing centralized military technical schools. Under this category both military and civilian curricula are

considered, but we begin by discussing contract training of military curricula that would constitute the least radical departure from current practices.

Arguments have been expressed that military instructors are better than civilian instructors for two reasons. First, they provide role models for new recruits. And second, the system of rotation means that instructors are up to date on actual military practices and techniques. These factors may aid in decreasing attrition and increasing reenlistment, so using civilian providers instead of military instructors could reduce the number of trained man-years, all other things equal.

However, the key issue is whether the decline in length of service, resulting from either higher attrition or lower reenlistment propensities, can be offset by significantly lower costs. Because everything is identical except the costs of the instructors and the administration of the program, the *marginal* changes in costs should be relatively straightforward to identify. However, there are costs associated with evaluating the proposals of competing organizations, and monitoring costs will increase. Again, performance contracts could provide an effective method for keeping monitoring costs relatively low.

The Navy's Contract Training Program

The Navy appears to be the only service with an extensive ongoing contract program for the active forces.[2] As mentioned in Sec. 2, the San Diego Community College District (SDCCD) has the contract with the Navy to provide instructors at the four largest training locations. One hundred and forty courses, primarily in general skills and theory, are taught at an annual cost of approximately $36 million. To date, the Navy has more than 10 years of contracting experience, and there is no indication that the program will be eliminated unless budgetary cuts force a large reduction in the training establishment.

Whether or not the Navy should continue the program will depend on a number of factors, including the alternative costs of running the program using military personnel and the expected effects on the life cycle of occupationally qualified personnel. Screening and monitoring costs would also have to be taken into account. Currently, monitoring costs include the costs of an on-site Contracting Officer's Technical

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[2]The information we have on the contract program is based on information gathered during our field interviews at SDCCD, CNET and CNTECTRA, the literature, and trip reports furnished by the Air Force ATC Contract Training Study Group.

Representative (COTR). The COTR, for example, reviews all of the instructor applications prior to hiring. Although Navy instructors usually attend a formal instructor training program before they start teaching, almost 85 percent of the contract instructors have the requirement waived, often because of their prior active-duty Navy training experience.

The supply of retired personnel has made it possible to hire instructors at a yearly salary that averages about $21,000. Even when benefits are included, the cost is considerably less than the pay, allowances, and benefits of an E-7 military NCO. However, the future supply of retirees must be considered when deciding whether or not to expand the program of civilian instruction in the current Navy contract program. There has also been some discussion of assigning chief petty officers to sit through the courses to provide a current military presence. These potential costs would also have to be considered.

In 1984, the office of the Chief of Naval Education and Training (CNET) undertook a cursory evaluation of the program[3] and found no difference in quality between contract training and in-house training. While we would not expect substantial TMY effects, little effort was made to systematically compare the outcomes of the training over time, which one would need to do to discover such effects. A major issue confounding any comparison is the fact that 100 percent of the courses in electronics principles are taught by civilians. Therefore, no contemporaneous control group exists to compare the effects of the civilian training with the effects of military training on TMY. In addition, information on individual training goes back only to 1979, the year that the contracting began, so even a longitudinal comparison would be difficult.

POSTACCESSION RESERVE COMPONENT TRAINING

From a cost perspective, civilian training may provide a way for the services to lower both student-related training costs as well as instructional delivery costs for reservists. Student compensation is less than what would be incurred if the student trained at a distant central facility because reservists receive only their regular reservist salary if the training occurs locally. Low instructional costs are likely because of the overlap between civilian and reservist skills. In addi-

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[3]The evaluation is contained in a letter dated December 21, 1984, from the Chief of Naval Education and Training to the Commanding Officer, Naval Training Equipment Center. Subject: Analysis of Military-Civilian Instructor Ratios in the Naval Education and Training Command.

tion, because the number of reservists training in any one occupation is likely to be low at the unit level, they may be able to enroll as students at a publicly subsidized training institute with low-cost tuition. Another advantage is that civilian capacity can be used to improve readiness when there is a shortage of military training slots.

From a TMY perspective, the value of civilian training may be high to those reservists starting or switching careers. The choice between central and local training will influence TMY one way or another, depending on which is greater—the opportunity costs of training at a distant location or the forgone full-duty salary and allowances associated with local training.

A program of local training for the reserves raises many of the same issues of screening and monitoring costs that arise with a program of decentralized training for the actives. On a decentralized level, not much oversight is possible when the number of individuals taking the training is small in any one location. However, the training will be of the same quality as that delivered to other students enrolled at the school; hence, some prior screening to identify the "higher quality" schools may be required. Here, we consider a set of ongoing programs in the Army as well as a Navy program that was never implemented.

The St. Phillips Licensed Vocational Nurse Program

Training at civilian institutions for reserve licensed vocational ("practical") nurses (MOS 91C) began about two years ago. Normally, the Army Medical Field Services School in Fort Sam Houston in San Antonio has space for 750 students, of which 300 slots are designated for reservists. To make more room for active force trainees, the Army entered into a service agreement with St. Phillips College in San Antonio, part of the Texas Community College System, to provide training to 170 students from Army reserve components. Students training at St. Phillips are under Army command and are housed at Fort Sam Houston. St. Phillips was picked because it was the only school in the area with a licensed vocational nurse training program.

The Army pays tuition of $1050 per student and $550 for books, as well as the usual duty pay and allowances while the reservists attend the same classes as the civilian students. The training is not monitored or evaluated as long as the students pass the Texas state licensing board exam at an acceptable rate. The Army has been generally satisfied with their performance. In fact, students are reportedly more eager to attend the St. Phillips program than the Army Medical

Academy's program because they are better prepared to pass their state's licensing board when they return home.

In the case of the St. Phillips program, its only difference from the Army program is in training techniques and staff. In other words, the military and the civilian curriculum are almost identical, since the length (one year) and content are mandated by the State of Texas Nursing Board.[4] Trainees must spend some additional time at the Army academy, as the administration of certain narcotics apparently can be taught only there.

Reservists still must be relocated to Fort Sam Houston, where they are housed and under command of the Army. Hence, any effect on TMY would come from any change in the value of the training in terms of civilian opportunities. However, if the reservists had no prior knowledge that the training would be at St. Phillips, as is probable, there would not have been any impact on enlistment.

Any cost advantage over the service school training would reflect differences in the costs of delivering the course. As already mentioned, modification costs would be virtually zero because the curriculum is regulated by certification boards. The screening costs were also very low because St. Phillips was selected on the basis of its being the only school in the area that offered the vocational nurse training. However, screening costs would be low even if there were many competitors, because certification rates could be used as an inexpensive proxy for quality.

Because St. Phillips is a public institution with capacity available to train the additional reservists, the marginal cost of training the reservists is low. It is reasonable to assume that if St. Phillips was operating at capacity, the marginal costs of facilities and instructors would have driven the cost considerably higher. On the other hand, since the military was short of capacity, the marginal cost of training the reservists on base would also have to reflect the increase in facilities and staff that would be required to accommodate additional students.

Although the St. Phillips program seems like an ideal solution for a shortage of training slots at service schools, it has several possible drawbacks. First, from the reservist's perspective, the program still requires basing at Fort Sam Houston, which may pose some hardship.

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[4]The length of training is fairly consistent across the United States, although some states require only nine months of training and a few mandate fewer than nine months. There has been some discussion about moving the nursing program to other states with shorter training time requirements.

Second, from the Army's point of view, student-related costs are much higher than would be the case if the individual were trained near his or her local unit.

Local Training: The Army National Guard

The compensation issues described in the section on individual-sponsored training apply here as well. Those guardsmen or reservists who are using the training for their primary career may actually prefer to be sent to a central military training facility in order to receive full pay and allowances. That is, the size of forgone civilian earnings associated with the training is likely to be small if the reservist would have pursued full-time training on his or her own to prepare for the civilian career.

The National Guard's ongoing program of contracting training for several occupations is the most extensive program we encountered that uses existing training institutions. While the exact number of participants is unknown by the National Guard Bureau, reportedly the number is in the thousands.[5] The program has been limited to occupations experiencing severe personnel shortages or cases in which training slots are unavailable at the training schools. The vast majority of the participants have been in the 91C MOS, although other MOSs have been authorized for local training. Because the program is open only to prior-service personnel, participants have already attended recruit training and IST at a military technical school at some time. Therefore, this use of civilian training is unlikely to affect the level of TMY as a result of a lack of military indoctrination and socialization.

Approval to train locally is obtained through the National Guard Bureau's Army Operations and Training Division. The funding for training comes directly from the account for school training funds. The decision to train locally rests on whether or not the cost of doing so is less than the cost of sending an individual to an Army technical training center, excluding course costs.

Since civilian training of licensed vocational nurses has become a fairly widespread practice in the Army for prior-service reservists, we attempted to estimate a portion of the costs under the alternative programs. We independently contacted various training organizations that provide vocational nurse training to determine the costs of

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[5]Based on correspondence with COL James O'Keefe, Chief, Army Operations and Training Division, dated November 7, 1990.

tuition across different categories of providers. The tuition costs are highly variable and depend, in large part, on the degree of federal, state, or local subsidization. For example, although St. Phillips, a state-supported community college, can offer the Army training at $1050 a year for tuition, a private vocational technical school, United Health Careers Institute, located in San Bernardino, California, charges $9015 for a similar program. The tuition charged at other proprietary schools contacted was on a par with that charged at United Health Careers Institute. However, even those costs are far below the personnel costs associated with sending an individual to the Army training program, which can run up to $30,000 for a 52-week course when full duty pay for an E-5, travel, permanent change of station, mess and quarters costs are tallied. Even when the annual salary of the reserve is added to the costs of the local training, it is still well below that of even the student-related costs.

While the compensation provisions seem to argue in favor of local individual training for longer programs, full data on the costs of running the civilian program should be collected, including the costs of identifying "quality" local institutions, contracting costs, as well as training-related costs. These costs should be compared with those of training at the military service schools. In addition, there should be some attempt to evaluate whether the program has increased enlistments and what the magnitude of that increase might be. The impact of the program on the length of duty should also be estimated. Currently, data based on the contracts, such as the institution, the number of individuals trained, costs, etc., are not routinely maintained, and the Bureau has no plans to track the personnel records of the VOTECH participants.[6]

Local Training: The Sea Air Mariner SEABEE VOTECH Program

The Navy also studied the possibility of a large-scale program of contract training for reservists at civilian institutions. Initial results of the study, undertaken by the Navy Personnel Research and Development Center (NPRDC), suggested such an option could provide low-cost training of quality commensurate with the Navy's training. The study included considerable detail on the prospects for contract

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[6]The Army has, however, indicated an interest in analyzing the training costs associated with many of the medical occupations with an eye to increasing contract training. The Army Medical Field Service School's Resource Requirements Office has been tasked with surveying off-the-shelf accounting systems to identify the best system.

civilian training under the Sea Air Mariner SEABEE VOTECH program for nonprior-service reservists. NPRDC addressed the issue of establishing course content guidelines in the absence of strictly enforced outside certification requirements like those for licensed vocational nurses and other health professional fields. The study recommended establishing a curriculum review board to oversee those specialities where standard curriculum is not mandated by outside authorities.

The staff at NPRDC concluded that it would cost approximately $200,000 to train 900 Navy reservists. The cost estimates were based on responses to a mail-in survey of many of the postsecondary institutions in the country. The results of the survey suggested that many public institutions would be willing to revise their curricula to meet Navy standards and train reservists at costs similar to in-state tuition costs. The schools were only willing to conduct the training under the assumption that they would receive additional state funding for the increased enrollments. Proprietary schools, lacking public subsidization, also expressed interest in training but at a much higher cost than their public counterparts.

In addition to the mail survey, NPRDC staff made on-site visits to 75 public institutions and concluded that the training was comparable to and in some cases "higher quality" than the Navy "A" school training. It was also concluded that the additional information obtained from the field visits was at best marginal. Staff members were scheduled to visit another 50 schools at the time that the program was abruptly suspended.

This effort on the part of the Navy is notable for several reasons. First, the program represents a major effort to canvass many of the postsecondary vocational and technical training institutes in the country. This information is still available as a source of data about civilian institutions.

Second, the results suggest that many schools were eager to provide the training, although the costs of such a program depended in large part on federal and state subsidization of students at public institutions. While it is unlikely that states will object to a few military personnel enrolling, a large number of such students may lead to demands that the military pay the full costs of the training. In addition, space availability may fluctuate unexpectedly.

Third, the alternative to training at the local institutions in the SAM-VOTECH program was not immediate training at the Navy technical schools but either lengthy on-the-job training or long delays driven by

the availability of training billets at the Navy technical training schools. This is true also of the National Guard program, which was initially instituted in response to billet shortages at the military training facilities. In order to evaluate the extent to which civilian training would increase reserve skill qualification levels or the number of trained man-years, the length of training delays at military training facilities would have to be estimated. Alternatively, the costs of providing immediate training for the reservists would consist of the costs of adding additional capacity and would depend on the source of the billet shortages.

CONCLUSION

In reviewing ongoing civilian-provided training programs, we have found that little in the way of formal evaluation has been undertaken, let alone any comprehensive evaluation using a concept like TMY. It should be noted, however, that these programs represent civilian-provided training that the services have been willing to implement, and in this sense they are worth exploring further. In the next section, we develop a feasible set of civilian-provided training options that are based on current and planned programs. These programs form the basis of a recommended demonstration project.

5. CHOOSING BETWEEN MILITARY- AND CIVILIAN-PROVIDED TRAINING

OVERVIEW

In the Defense Authorization Act for fiscal year 1990, Congress briefly outlined a number of alternative training strategies and directed DoD to consider implementing them:

- Pre- or postaccession technical training (i.e., noncombat, including electricity, machinery, welding, surveying, journalism, and photography) provided by institutions of higher education and vocational schools;
- encompassing both active and reserve forces;
- providing a stipend during preaccession training.

Congress's concerns with civilian-provided training as a substitute for military-provided training focused on the following questions:

- Can civilian institutions provide technical training at equal or lower cost and equal or higher quality?
- Can training reasonably be provided by civilian institutions within a preaccession scenario?
- Can civilian-provided training enhance the readiness of reserves?

Although the services and DoD generate a modicum of internal pressure to increase the efficiency of their training programs, congressional interest in recent years has speeded the services' pursuit of alternative training strategies. As the pressure increases for the services to use the existing network of civilian organizations to provide military technical training, policymakers in DoD will need to be prepared to choose wisely among a number of competing training strategies. Although the services have some limited experience with civilian-provided training programs, they have not systematically evaluated their programs in a way that provides answers to current congressional concerns. Nor have the services evaluated their programs in a way that will serve them in making future strategic training decisions.

In Sec. 3 we introduced a framework for evaluating training options. Our concept is based on the straightforward idea that the value of a

training program to the services is in the level of expertise it produces and in the availability of that expertise over a period of time: trained man-years (TMY). In Sec. 4 we reviewed past and ongoing training programs against the backdrop of TMY. Our purpose in this section is to develop a proactive strategy, based on our concept of trained man-years, for evaluating and choosing among training alternatives.

A STRATEGY FOR EVALUATING TRAINING ALTERNATIVES

Although Congress has requested that a project be designed to demonstrate the feasibility and value of using civilian-provided training, one might reasonably question whether such a project is required, and if so, what the scope of it should be. That is, why not decide on the basis of available information whether or not to use civilian-provided training? We begin by reviewing the information that would be needed to make this decision, followed by a brief discussion of the current availability of the required information.

Information Required for Decisionmaking

As we have discussed in Sec. 3, we believe that the basis for comparing training alternatives should be in terms of the cost of programs producing equivalent trained man-years. Choosing among training alternatives on this basis requires the following information:

- Trained man-year variables
  - Accessions
  - Training time
  - Retention
  - Reenlistment
- Cost variables
  - Training
  - Screening
  - Program monitoring
- Output quality variables[1]

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[1]We refer to output quality measures in a competency or criterion-referenced sense. There are many questions that we do not address in this report associated with deciding what ought to be trained and to what level of proficiency. For our purposes, it is sufficient to assume that the quality of training programs is equal if individuals completing training can perform the same tasks at the same level of proficiency.

- End-of-training proficiency
- Performance on the job[2]

Some of this information currently exists to greater and lesser degrees with regard to military-provided training programs. As we have indicated in Secs. 2 and 4, the services have for the most part not used this information to compare their past or present training programs.

The trained man-year variables are readily available across the services, with the exception of detailed data on individuals who are recycled through training (e.g., who recycles, how many times, and for what reasons). Cost data are also available for analysis, though not always at the level of detail required for comparing training alternatives, even on an intraservice basis, let alone across services, or comparing service costs to civilian costs. While the services generally evaluate end-of-training proficiency, these data typically are not maintained for any substantial period of time, nor are they readily available in a form amenable to analysis.[3] Job performance data typically are not available because the services do not routinely collect them.[4]

With regard to civilian-provided training programs, very little of the required information is available, to say nothing of its being in a form that facilitates direct comparisons to military-provided training. For example, the effects of a civilian training program on enlistment, re-

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Alternative training programs must be evaluated to determine whether they provide training in the same tasks and to the same level of proficiency as current military training programs. Thus, our interest in outcome measures is in ensuring that trainees from civilian-provided training programs can perform the same tasks at the same level of proficiency as their military-trained counterparts.

[2]In a recent report, the United States General Accounting Office (GAO/PEMD-91-4, 1990) criticized the services for their inability to determine the success of their training programs. The lack of this critical information renders it impossible to compare military and civilian training in any meaningful way without a new data collection effort.

[3]The GAO reported that it "identified some problems with the utility of data maintained by the Army on classroom performance in certain specialties." It also noted that although the Navy and Air Force data were of better quality, "it would not be appropriate to make interservice comparisons on the basis of this finding, . . . since much of the Navy training information and all of the data we received from the Air Force were specially prepared for research purposes" (GAO/PEMD-91-4, 1990, pp. 42–43).

[4]With regard to field measures of job performance, the GAO noted that "the Army's Skill Qualification Test provides the only objective, systematically collected estimates of the field performance of individual graduates of training. The Air Force and the Navy rely instead largely on feedback mechanisms through which field commanders and supervisors may submit complaints to the training community" (GAO/PEMD-91-4, 1990, p. 4)

tention, and reenlistment are entirely unknown and unknowable from extant information. Training prices are generally available from civilian institutions, though they may vary widely from location to location.[5] Since these prices (i.e., the costs to students) are typically subsidized by state and federal authorities, it is not clear that widespread training would be available to the military services at the same price. With the reauthorization of the Carl D. Perkins Vocational Education Act, there is increasing emphasis on accountability in vocational education, and this may lead to increased information on end-of-training student competencies. Nonetheless, the Office of Technology Assessment reported that "13 States are engaged in testing the occupational competencies of vocational and technical students and 7 States are in the process of developing competency tests for vocational students."[6] Certainly, one might reasonably expect little standardization across civilian institutions of assessments of student competencies at the end of training. Thus, little of the required information is readily available for analysis, and that which exists is decidedly not in a form that would facilitate analysis.

On the other hand, some of the decisions that would be supported by a TMY analysis could be reached in other ways. For example, one could use indirect means for comparing the adequacy of civilian-provided training as a substitute for military-provided training. One is through a comparison of military and civilian curricula. The Army has determined that civilian institutions already teach as many as 98 percent of the tasks that the Army teaches in its technical training course for light wheel vehicle mechanics.[7] In a similar vein, the Air Force has developed a list of 52 specialties that it has judged amenable to civilian training.[8] Of course, accepting curriculum similarity or even equivalence as evidence of equivalent output quality (i.e., student competency at the end of training) requires one to make the assumption that all providers teach tasks to the same degree of competency. Even if one is willing to accept this assump-

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[5]For example, in a study conducted by the U.S. Army Training and Doctrine Command (1991), the cost of training a wheeled vehicle mechanic varied from $2400 to $1300 per trainee, depending on the state where the course was available, for substantially the same course content.

[6]*Performance Standards for Secondary School Vocational Education Background Paper*, Science, Education, and Transportation Program, Office of Technology Assessment, Congress of the United States, April 1989.

[7]TRADOC briefing on "Training Strategies for the 90's," March 1991.

[8]See "A Contract Training Feasibility Study," December 1990, prepared by the Contract Technical Training Study Group.

tion, this method of comparison only addresses the equivalence of graduates from training programs in terms of task competence. It does not begin to answer the questions associated with recruiting, attrition, and retention that are critical to military manpower planners, and that make a TMY analysis important.

With regard to cost, both the Army and the Air Force project that using civilian-provided training for the occupations they've examined would result in cost savings. Their conclusions are based on a small survey of civilian institutions and are blind to the potential effects of a civilian-provided training program on recruiting, attrition, and retention.[9] Thus, on the grounds of task comparability and initial, simple cost projections, without undertaking a demonstration project, one might be able to conclude that civilian-provided training is feasible, perhaps even desirable, for a number of occupations.

However, several important questions remain unanswered, and we believe that a demonstration project is required to address them. The questions that cannot be answered except by a demonstration project include the following:

- What will be the effect of civilian-provided training on recruiting, attrition, and retention?
- What will these effects be on reserve component training readiness, recruiting, attrition, and retention?
- Will use of generic equipment in civilian training courses result in on-the-job performance decrements?
- Will on-the-job training requirements increase, either because of equipment differences or skill decay?
- Will military discipline suffer because of reduced exposure to military personnel during training?

Because the services already have generated plans for examining civilian training options, some aspects of the demonstration project that we propose would require only minor modifications to these planned programs. Other aspects of our proposal require more substantial changes to the services' plans and practices.

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[9]The Air Force conclusions include estimates of attrition during training, but they have not addressed either recruiting, attrition that occurs after training, or retention.

General Design Principles for a Demonstration Project

The evaluation of each scenario follows a natural two-stage process because the trained man-years approach examines both short- and long-term impacts. The choice of occupations to be examined within a demonstration project is an important topic that we discuss after laying out our ideal and proposed designs.

During the first stage, the focus is on comparing alternative training strategies in terms of enlistment rates, cost, and task proficiency prior to first duty assignment. Completion of the first stage may require a year or more to provide sufficient sample size for estimating effects. For example, in FY89 the Army had projected that it would train 36 Dental Specialists (MOS 91E), 30 Topographic Surveyors (MOS 82D), 356 General Construction Equipment Operators (MOS 62J), and 96 Journalists (MOS 46Q).[10]

The second stage focuses on differences in retention across scenarios. As we indicated in Secs. 3 and 4, the very aspects of civilian-provided training that attract people to enlist may also result in reducing the length of their military service. In order to examine this effect, individuals must be tracked during each year of service, through at least their first reenlistment opportunity.

An important corollary measure and design consideration has to do with the potential effect of stipends on enlistment rates. One might reasonably expect that changes in training (e.g., local versus centralized; civilian versus military) would have an effect on enlistment propensity, perhaps especially in the reserve components, but Congress has also indicated an interest in providing stipends during preaccession training, the size of which can be expected to affect enlistment rates. In fact, it seems clear from earlier work addressing enlistment bonuses and compensation that the dollar amount of a stipend offered during preaccession training would affect initial recruiting and, potentially, motivation during training and beyond.

Addressing these questions requires careful design. First, we present the details of the minimum control and treatment groups we feel are necessary for a complete experiment. But in addition to defining these groups, careful attention must be paid to the potential for confounding treatments in such a way that the experimental effects cannot be estimated. For example, treatment groups will most likely have to be geographically separated and balanced. In order to assess

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[10]United States Total Army Personnel Command (PERSCOM) Force Management Book, FY 1989.

treatment effects, groups must be equivalent either through random assignment or through some form of matching. We recommend developing these design details if a decision is made to go forward with a demonstration project.[11] Next, we outline an ideal design for conducting a demonstration project. We do not believe that this design constitutes *minimum* required design goals, but rather *ideal* goals in the true sense of the word. After outlining an ideal design, we present what we believe to be realistic goals for a demonstration project.

AN IDEAL DEMONSTRATION PROJECT

Active Forces

For the active components, we believe that a number of pre- and post-accession scenarios may be worth investigating. These civilian-provided training scenarios can be described as follows:

- Preaccession (i.e., initial skill training → recruit training → duty assignment):
  - Regional or local, military curriculum, low stipend
  - Regional or local, military curriculum, high stipend
  - Regional or local, civilian curriculum, low stipend
  - Regional or local, civilian curriculum, high stipend

- Postaccession (i.e., recruit training → initial skill training → duty assignment):

  - Centrally offered (military training center), military curriculum, civilian contracted instructors
  - Centrally offered (military training center), civilian curriculum, civilian contracted instructors

In order to be able to make the experimental comparisons of interest, one control group is required in addition to the six experimental treatment groups listed above. For this group, training would continue to follow current military practice. That is, after enlistment the individuals in the control group would attend recruit training fol-

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[11]See J. Michael Polich, James N. Dertouzos, S. James Press, *The Enlistment Bonus Experiment*, RAND, R-3353-FMP, April 1986, for a detailed discussion of these issues and an example of a design that controls for them.

lowed by initial skill training (IST) using the military curriculum and military instructors. Proficiency would be assessed by the end-of-course exams currently in use at the military training centers.

To make the appropriate comparisons concerning proficiency, including testing for skill decay in the preaccession groups, individuals would be measured twice: at the end of IST, and at the end of recruit training. The dependent variables for the analyses would be enlistment rates and cost and quality of training, as defined by the TMY model.

Reserve Forces

The reserves face essentially two training problems. The first is in providing training for nonprior-service individuals and is similar to training the active force. The second is training prior-service individuals and those who transfer between reserve units. Often, these individuals need to be retrained in their occupational specialty or cross-trained in a different specialty. These requirements lead directly to the primary questions that need to be addressed by a demonstration project.

The first question is whether local or regional technical training can be substituted for centralized military training. The second is whether local training increases prior-service enlistment and MOS qualification rates. Preaccession training options for reservists do not seem to us to be worthwhile either in terms of increasing enlistments or in terms of reducing costs; in any event, they are already accounted for in the active force scenarios. In order to evaluate reserve force civilian-provided training alternatives, the following groups are required:

- Prior-service (i.e., reserve enlistment → technical training → reserve duty assignment):
  - Centrally offered (military training center), military curriculum
  - Centrally offered (military training center), civilian curriculum
  - Regional or local, military curriculum
  - Regional or local, civilian curriculum
- Nonprior-service (i.e., recruit training → initial skill training → reserve duty assignment):
  - Same set of alternatives as above

Table 5.1 summarizes the various alternatives that we have identified as training options for an ideal demonstration project. For purposes of simplification, the table does not display a control group. In the next section, we recommend implementation of a demonstration project that is built primarily on planned or ongoing programs. As we shall see, the options included in our ideal demonstration project can be tested with a few modifications to planned or ongoing programs.

PROPOSED DEMONSTRATION PROJECT

As we indicated in Sec. 2, evidence suggests that the services have resisted civilian-provided training in the past. However, both the Army and Air Force are currently actively studying civilian-provided training options, primarily for their active force recruits. In our judgment, many of the questions related to comparing civilian and military training could be answered by taking advantage of these ongoing military initiatives. By doing so, many important questions can be answered with minimum disruption to current practices, at minimum additional cost, and in a minimum amount of time.

Choosing Occupations

In Sec. 3 we discussed how various civilian-provided training scenarios would affect the output of trained man-years. In addition to considering the broader effects of different scenarios, the interaction of occupation and training scenario needs to be examined. Next, we dis-

Table 5.1

Summary of Ideal Demonstration Project Scenarios

Group		Timing		Curriculum		Location		Stipend	
		Pre	Post	Civilian	Military	Local	Central	Low	High
Active	1	X			X	X		X	
	2	X			X	X			X
	3	X		X		X		X	
	4	X		X		X			X
	5		X		X		X		
	6		X	X			X		
Reserve	7		X		X		X		
	8		X	X			X		
	9		X		X	X			
	10		X	X		X			

cuss several occupational characteristics that are important in designing the demonstration project. This discussion provides a conceptual basis for choosing among occupations in developing the demonstration project.

Specific scenarios may be more appropriate for specific occupations or groups of occupations, and may differ in feasibility for the active and reserve components. The variables that need to be considered include:

- Similarity of military and civilian occupations
- Specificity of military equipment within the occupation
- Geographic availability of occupational training
- Existence of established quality assurance mechanisms
- Active versus reserve suitability

Each variable is discussed below.

Occupational Similarity. Fortunately, much of the work comparing military and civilian occupations has already been accomplished through the efforts of DoD and the individual military departments. Their results indicate substantial overlap both across the services and between military and civilian occupations.

In examining occupational similarity for the purpose of choosing military occupations for which civilian training could be substituted, it is important to keep two points in mind. First of all, regardless of the level of skill one brings to the job, some degree of additional training always occurs on the job. This on-the-job training is specific both to the organization and the work site itself. For less experienced workers it may consist primarily of learning to apply basic job skills acquired during training as well as learning new and more detailed and advanced job skills. For both inexperienced and experienced workers it entails learning organizational and local operating procedures and becoming familiar with organizational and local work site customs. Second, the skill-level requirements of initial duty assignments for military personnel are relatively limited, ard new recruits usually receive substantial supervision during perfo·mance of all but the simplest of job tasks. Together, these factors suggest that it is not necessary for military and civilian occupations or training to be identical before it would be feasible to substitute a civilian training alternative. Nonetheless, it seems obvious that the greater the similarity of military and civilian occupations, the greater the flexibility of choice among training alternatives.

The first and most obvious sources of information for identifying similar occupations are the individual services' lateral entry regulations.[12] These regulations list the specific occupations for which the services recognize civilian training and experience as directly relevant to their military counterparts. Copeland and Thompson (1982) stated that 22 Navy "A" school-level Navy Enlisted Classification (NEC) ratings and 80 Marine Corps occupational specialties could be effectively trained by vocational training institutions. The appendix lists the occupations included in each of the services' regulations.

A second source of information is the occupational crosswalk data developed by DoD. Occupational matches were made between military occupations and civilian occupations included in the *Dictionary of Occupational Titles*. In addition, the quality of match was also estimated, ranging from "highly related" to "unrelated."[13] Several occupations, such as Infantryman, have no civilian equivalent and are so noted in the crosswalk data.

Using these two sources of information, it is possible to identify candidate occupations for which civilian training alternatives would be most feasible on the grounds of similarity. Our analysis suggests that occupational groups which appear to be good candidates for civilian training, in addition to those noted in the Authorization Act, are medical and dental, food service, vehicle driving and maintenance, and construction and building trades.

Specificity of Equipment. To some degree, concern over the specificity of military equipment is alleviated by the skill level to which training occurs. Clearly, if individuals are expected to perform with little or no supervision immediately upon arrival at their duty station, it will be critical for them to have had experience with actual equipment or high-fidelity simulators. This requirement would limit the flexibility of choice and number of potential training locations. For those military occupations with relatively few individuals and highly specialized equipment that fall into this category, the only potentially effective treatment might be to use existing military training facilities and contract for instruction and curriculum development (we also suggest this treatment for large centralized military occupations). Military weapons systems maintenance occupations (e.g., tank turret repairer), or what TRADOC refers to as high-tech "green" occupa-

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[12]A description of the services' lateral entry programs is provided in the appendix.

[13]The U.S. Army Training and Doctrine Command (TRADOC) has categorized Army occupations as "green" and "not green" to identify those that in the Army's official judgment are most and least amenable to civilian training.

tions, may fall into this category. On the other hand, there may be some occupations for which low-fidelity simulators or generic equipment would be sufficient to provide the skill level required for tasks performed by entry-level personnel.[14]

Occupations that need to train entry-level personnel with highly specific military equipment simply may not be amenable to civilian training. This is because expensive equipment or simulators could not be provided economically for the relatively large number of locations required.

Geographic Availability of Occupational Training. The geographic availability of civilian training alternatives is yet another relevant factor in determining which scenario suits a particular occupation. For example, local training seems most feasible for members of the reserve components. The U.S. Army National Guard is currently able to train some of its LPNs (MOS 91C) in civilian programs because there are many state-approved public and proprietary schools available to provide this training. Significant cost savings are realized by using a local training option as opposed to sending guardsmen to the Army's central training facility at Fort Sam Houston in Texas. Training in other occupations, such as carpentry and masonry, is also widely available and may be amenable to local training.

On the other hand, local training is less available for some otherwise suitable occupations, such as aviation maintenance or heavy equipment operator. These and similar occupations—where training is typically offered in regional centers—may be good candidates for a preaccession training program for active component recruits, if the use of regionally available training can be shown to be cost-effective. Similarly, postaccession regional training may be cost-effective for reserves, if the regional center is within local commuting distance for them.

Existence of Established Quality Assurance Mechanisms. One difficulty associated with evaluating the quality of civilian training

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[14]TRADOC has recently examined the specific tasks currently trained in six military occupations to determine whether these tasks are now being or could be taught by civilian training institutions. One of the variables TRADOC has considered is the need for unique military equipment. It has speculated that in certain of these occupations, training on generic equipment may be acceptable.

While somewhat beyond the scope of our report, it may also be possible to restructure training so that tasks requiring real equipment or high-fidelity simulators for training could be taught on the job. It is our suspicion that such tasks are already heavily supervised for entry-level personnel, so that they are receiving *de facto* on-the-job training.

will be in assessing the proficiency of graduates. Irrespective of scenario, occupations for which there are established quality assurance mechanisms (e.g., federal or state licensing, accreditation by recognized agencies, etc.) will be more desirable for the demonstration project than those that lack such mechanisms. Medical and aircraft maintenance occupations are examples that fall into this category, but the same is not true for most occupations. In addition, it may be difficult to choose among similar institutions in a local area because program effectiveness is not measured across institutions. Civilian institutions often evaluate programs in ways that may or may not be comparable (e.g., post-training job placement or tenure, end-of-course testing).

Active Versus Reserve Suitability. While the distinction between active and reserve components is important in choosing scenarios, it is not as straightforward as it may initially seem. For example, existing military training capacity should play a role insofar as actives and reserves are treated differently. A prime example of this is in training Practical Nurses: the U.S. Army apparently has sufficient capacity to meet the training needs of its active forces but not its reserves. Rather than closing existing facilities and shifting training to the civilian sector, it may make more sense to use civilian institutions for reserve training and peak active training requirements. In fact, using civilian training options for peak training loads may make sense in several occupations.[15]

For these kinds of occupations, a preaccession option for active recruits may also make sense. The cost of tuition and a modest stipend or bonus may be substantially less than the personnel costs incurred during normal military training. Furthermore, preaccession training may lead to an increase in trained man-years, especially for those occupations with high training costs and high turnover, because a greater proportion of active duty time would be spent productively. For example, a four-year enlistee who spends one year being trained at full pay and benefits and three years in an operational unit prior to leaving the service is obviously less productive than a preaccession-trained individual who is paid less during training and spends four fully trained years in an operational unit.

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[15]In some sense, this is similar to the services' current use of lateral entry programs to enlist individuals in occupations for which the military has a shortage.

Proposed Active Component–Postaccession Demonstration

The current Navy contract training program, which we have discussed elsewhere in our report, is a variation of our active component–postaccession scenario. The Navy program represents row 5 in Table 5.1. However, the Navy has not gathered sufficient data to compare empirically the quality and cost associated with substituting civilian instructors for military instructors. To accomplish this, the Navy program might be modified to include a parallel course taught by military instructors (i.e., a control group), and random assignment of individuals to treatment and control groups. Second, plans should be made to gather both cost and proficiency data from both the military and civilian courses.

Proposed Active Component–Preaccession Demonstration

We have two proposed strategies for addressing the value of preaccession training for the active force components; each requires modifying an existing or planned program.

The first strategy is to modify a demonstration project being considered by the U.S. Air Force that will focus on three occupations. It is the intent of the Air Force to use either current military curricula or civilian-provided curricula; to contract with regional training institutions; to enlist individuals in the Air Force Reserve prior to training; to ship individuals to the contracted civilian regional training centers rather than a single centralized civilian or military training center; to provide on-site military counseling; and to pay a modest monthly stipend to trainees. The Air Force plans are to continue the project for a six-month period and to close down Air Force training in those occupations for that time. This plan represents row 1 in Table 5.1. It is our understanding that it may use civilian-developed curricula instead of the current military curricula. If it adopts this modification, the project would represent row 3 in Table 5.1.

While we applaud the Air Force's initiative and recognize that it is attempting to deal practically with operational constraints, we feel that its plans could be strengthened by a few changes. The primary modifications we would add to the strategy include:

* Continuing concurrent military training in the proposed specialties at the Air Training Centers for purposes of providing a strong control group (including random assignment to groups).

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- Inclusion of at least two levels of stipend (this would add coverage of row 2 or row 4, Table 5.1).

- Expanded time period for the study, to include the tracking of retention through initial reenlistment.

- Formalized proficiency testing at the end of training and again prior to first duty assignment.

The Army Training and Doctrine Command is also developing plans for using civilian-provided training, though we do not yet know whether it will develop a pre- or postaccession program, or both. While its choice of occupations may not be the same as the Air Force's, if these projects are sufficiently coordinated, the opportunity exists for each service to leverage the results of the other.[16]

As for our second strategy, the existence of the Navy contract training program described in earlier sections of our report provides a unique opportunity for examining not only a postaccession option, but a preaccession option that we feel is especially in keep. : with the spirit of the congressional interest. The Navy program current substitutes civilian instructors for the basic electronics portion of the avionics course in Millington, Tennessee. We recommend that a preaccession program similar to that proposed by the U.S. Air Force be tested using the seven-week portion of training now taught by civilians. The seven-week curriculum could be promulgated to regionally located and contracted training institutions. Individuals attending those institutions would join the avionics training at Millington beginning at week eight. The training schedule for these individuals would consist of seven weeks of preaccession training, followed by recruit training, followed by avionics training at Millington. End-of-module proficiency tests and end-of-training proficiency tests could serve to compare three scenarios: preaccession basic electronics training; postaccession military basic electronics training; and postaccession civilian basic electronics training.

Although these proposals do not account for all of the rows in Table 5.1, they would provide a reasonable test of a number of both pre- and postaccession alternatives.

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[16]The need for this kind of coordination emphasizes the importance of a DoD-level organization capable of developing and ensuring these kinds of cooperative arrangements among the services.

Proposed Reserve Component–Prior-Service Demonstration[17]

The beginnings of a demonstration project are under way in the Army National Guard (ARNG) in its training of LPNs. Unfortunately, like the Navy, it has failed to gather the necessary data to be able to offer empirical evidence that civilian training compares favorably, in terms of quality and cost, to military training. Training of LPNs in the ARNG currently includes alternatives represented by rows 8 and 10. Some of ARNG's soldiers are already trained under control group conditions (though not randomly assigned). Clearly, the simple addition of data gathering and random assignment would render this program extremely important in supporting decisionmaking with regard to civilian-provided training for the reserves.

Proposed Reserve Component–Nonprior-Service Program

This is one area where we are aware of no existing or planned programs, yet it is of crucial importance.[18] Since the personnel in many Army National Guard units are in combat occupations, civilian training options generally don't exist for them. However, Air National Guard units and the reserve forces in all services have many support occupations that are highly amenable to civilian-provided training.

We recommend that a program be developed, in keeping with our general design principles, for an occupation for which local training is widely available. Examples would be light vehicle mechanics or many medical or dental occupations, such as dental assistant.

COSTING THE DEMONSTRATION PROJECT

In Sec. 3 we outlined the cost components associated with producing an occupationally qualified recruit and discussed the potential effects of different scenarios on the cost and quality of training. For our reserve component scenarios, civilian training would require the payment of civilian tuition but could reduce the cost of travel and pay and benefits for individual trainees. At the same time, fixed costs at

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[17]Because it is our expectation that local training for members of the reserve components would be less disruptive than centralized training, and hence quite attractive in itself, we believe that it is unnecessary) offer stipends within these scenarios.

[18]Reserve enlistments may be expected to be drastically affected by the use of many reserve units in the Persian Gulf area or in support of efforts there during Operations Desert Shield and Desert Storm. As we have noted earlier, a local training option for reserve component recruits could have a substantial positive impact on enlistments.

the military training centers would not be reduced. Preaccession active component scenarios would require the payment of a stipend and tuition but could also reduce the cost of pay and benefits. Postaccession scenarios require the payment of tuition without any likely reduction in current fixed costs. Each of these scenarios would have unknown effects on attrition, changing the real cost of a qualified recruit.

In addition, the demonstration project itself would accrue direct costs associated with its administration, including the costs of locating potential contracting institutions, developing and administering the required contracts, and evaluating the outcomes in terms of cost and quality of training. Not the least of the difficulties associated with evaluating the demonstration project is that there is a great deal of controversy over calculating current training costs, making it difficult to compare the cost-effectiveness of the varying training options. For these reasons, we were unable to estimate the costs of a demonstration project using information currently available to us.

MANAGING THE DEMONSTRATION PROJECT

As our review in Sec. 2 demonstrated, the military's use of civilian-provided training programs has been relatively ad hoc and service-specific. We find a potpourri of programs developed for a variety of purposes and managed by a variety of organizations within the services. Some interservice training activities are coordinated by the DoD Inter-Service Training Review Organization (ITRO). For example, the "Military Manpower Training Report FY 1992" lists over 60 courses/skill areas in which individuals from two or more services participate in a training course offered by a single service. ITRO meets quarterly, and chairmanship rotates among the services. Should the demonstration project and follow-on programs, if any, be managed by the individual services, with coordination by ITRO?

We believe there are good reasons for departing from the status quo in this regard. Perhaps most importantly, civilian-provided training programs can be expected to affect recruiting. For example, a hometown preaccession training program initiated by one service may draw recruits away from the other services. This ultimately may be judged to be an acceptable result, but it is more likely to be examined with some form of joint rather than service-specific management. Just as in developing differential educational assistance or bonus programs across the services (e.g., the Army College Fund), cross-service effects must be taken into account. Economies of scale are also more likely to result from a joint effort. For example, if one service

develops a regional program for truck mechanics, it might make sense for the other services to send recruits to that program rather than to develop their own in the same region.

The alternative is to provide a greater degree of centralized accountability and control than currently exists. There are different degrees and ways in which accountability and control could be centralized. For example, the services simply could be required to coordinate their civilian-provided training programs through ITRO. ITRO itself could be restructured to include permanent chairmanship by OASD (FM&P) or another organization. Another DoD-level agency could be tasked to manage civilian-provided training programs. Because of their link to civilian education and training, the Departments of Labor or Education could be given an explicit role in developing and managing these programs.

But even though one could argue that the Departments of Labor and Education have a legitimate role in developing and managing these programs, ultimately the requirements for the skilled labor the programs would provide exist in and are defined by the services—these departments are simply too far removed to be effective. Because ITRO is an ongoing organization that has strong ties to the services' training communities, it does not make sense to create a new organization or to bring an additional DoD organization or agency into the process. However, we do have some concerns with the adequacy of the current structure of ITRO to develop and oversee these programs effectively—the current structure primarily represents the needs and desires of the services. What is required is a better balance between the interests of the individual services and of DoD as a whole. In this regard, we recommend that ITRO be restructured into a Joint-Service Working Group on Training Policy.

In designing the structure of such a working group, DoD need look no further than OASD (FM&P) to the Manpower Accession Policy Working Group for an example. At the top of this group is the Manpower Accession Policy Steering Committee, chaired by a three-star flag officer from OASD (FM&P). Each service is represented by a two-star flag officer from its department-level personnel organization, such as the Army's Office of the Deputy Chief of Personnel. This committee meets as needed to set DoD policy with regard to manpower accessions. Supporting this group is the working group itself, which consists of policy and technical representatives from each of the services. The working group meets quarterly to discuss and resolve technical questions and suggest policy implications of different courses of action. Policy recommendations are forwarded to the indi-

vidual services and the steering committee through the working group's policy members.

Thus, we recommend restructuring ITRO into a Joint-Service Working Group on Training Policy headed by a steering committee to be chaired by a three-star or equivalent ranking official from OASD (FM&P) with two- or three-star representatives from each of the services' training organizations. The working group itself would include lower-level policy officials and technical representatives from each of the services' training organizations. The first task of this group would be to develop and carry out a demonstration project as outlined above.

SUMMARY

While there is a myriad of possible training options to choose from, some simply make better sense than others. We have attempted to identify these. A potentially controversial set of alternatives that we have suggested includes turning over curriculum control to civilian institutions. The military services exercise quality control over their students primarily through careful control of the curriculum. In a competitive market, training providers might reduce costs by shortening the curriculum. If this reduced costs to the military while still maintaining equal proficiency, then it would be a positive development. If they divest themselves of curriculum control, however, the services would have to develop careful mechanisms to ensure proficiency by other means.

Another potentially controversial twist in our recommendations is for partitioning the Navy's ongoing training program into a pre- and postaccession component. If this turned out to be successful, it seems to us that there are a number of other areas where this strategy could work, such as basic mechanical principles, or even job safety. The notion of consolidated preaccession training in a number of somewhat generic job skills is particularly appealing

In designing a set of reasonable training alternatives, occupational characteristics play a critical role. In this section we have discussed several variables to be considered in occupational choice. What is clearly true, however, is that a wide variety of military occupations have civilian counterparts, and hence available civilian training alternatives.

Perhaps the most positive note is that the services have already begun to explore options for using civilian-provided training. Unfortunately, in developing these programs, too little attention has been

paid to a deliberate evaluation strategy. By carefully collecting cost and proficiency information, and following our TMY model for evaluating the options, the services could remedy this problem.

6. CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The purpose of this study was twofold: to determine the feasibility and practicality of using civilian institutions to provide military technical training and, if such alternatives existed, to develop a strategy for evaluating the most promising of them. Based on our analysis, we draw the following major conclusions.

Many Military Occupations Are Amenable to Civilian Training

It is clear that substantial overlap exists across the technical skill requirements of civilian and military occupations. The military and civilian training and education establishments have formally examined the extent of this overlap in several projects. Among others, these include the U.S. Navy's Civilian Training Inventory program (CIVTRAIN) for identifying local occupational training resources for its reserves, formal lateral entry and apprenticeship programs that exist in all of the services, and educational crosswalk programs specifically designed to facilitate the granting of civilian educational credit for specific military training and experience. The Army alone includes in its lateral entry regulations over 100 occupations for which civilian training or work experience is relevant. Army training in these occupations in 1990 was expected to exceed 30,000 individuals. In addition to this evidence of the applicability of civilian training for military occupations, in some few instances the military services already use civilian institutions for providing IST. Thus, the question of using civilian institutions is not so much a question of whether it can be done, but instead a question of the specific occupations in which it should be done, how it can best be done, and whether it is cost-efficient to do so.

Former and Existing Programs Have Not Been Adequately Evaluated

We reviewed both past and current efforts by the military to use civilian institutions as providers of IST. While there have been several failures to successfully implement or continue civilian-provided military IST programs, there are some notable, ongoing examples. These programs have been primarily reactive rather than proactive, undertaken as the result of impending manpower shortages or budget pres-

sures rather than as a means for improving either the quality or efficiency of training.

We conducted our review in the context of a conceptual model we developed for evaluating training programs. We hypothesized that civilian IST programs could be expected to have effects on recruiting, performance during training and beyond, attrition, and reenlistment, as well as on the marginal and fixed costs of training. That is, through a number of complex mechanisms, civilian-provided IST programs can be expected to affect the cost and quantity of trained man-years available to the services.

We had fully expected that the services would have evaluated both their past and current programs, if only to determine whether they had met the policy goals for which they had been undertaken. Unfortunately, this was not the case. Our few attempts at evaluating these programs were unsuccessful due to a simple lack of readily available information regarding either the cost or quality of training.

Civilian-Provided IST Appears to Have Benefits in Some Circumstances

Based on information gathered from our literature review, site visits, and our analysis of the issues and mechanisms involved, we believe that in some circumstances there are clear benefits to using civilian institutions for training. For example, for prior-service reservists and guardsmen whose active-duty occupations do not match their reserve or National Guard duty assignment, civilian-provided training seems a good idea. As we have argued, additional time away from homes and families in order to attend military training may be a strong disincentive to joining or continuing in a reserve component. In addition, if civilian training can be provided locally, savings in pay and travel costs, as well as increased readiness due to availability of training, may provide substantial incentives for the services to undertake and encourage the use of such programs.

However, the benefit of using civilian-provided IST for nonprior-service reservists is not nearly as clear-cut. Because of the relatively short amount of time that nonprior-service reservists and guardsmen spend at active duty for training, and the services' concerns with inculcating military values, the overall effect of civilian training for these individuals may be mixed. It may be important for these individuals to attend IST in a military environment in order to reinforce the military values taught in recruit training. On the other hand, because of the civilian environment in which reservists and guardsmen

live and work, an additional few months of exposure to military values during IST may have little impact in the long run.

The question is far more complex for the active forces. The savings or improvements in the quality of training that might result from the use of civilian institutions is unknown. It is not at all clear, and there is no evidence, that any civilian postaccession IST program would be either less costly or provide higher-quality training than current military programs. In fact, existing centralized military training capacity seems to favor the status quo of military-provided postaccession training.

As for preaccession civilian-provided IST, the potential effects are far too complex to merit proceeding without the benefit of a carefully designed and evaluated demonstration project. In addition to costs, such programs could reasonably be expected to affect both the quality and flow of manpower to operational military units. To some degree, the services' minimally used lateral entry programs represent longstanding examples of preaccession IST, the primary distinction being in who bears the cost of training. In lateral entry programs, the cost of training is paid by the individual, whereas the preaccession IST programs of interest to Congress place the burden of cost primarily on the services. Depending on the amount of the stipend paid to individuals during preaccession training, some of the costs may be shared by them as well. Determining the appropriate level of stipend that would ensure an adequate supply of quality manpower to the services within a given occupation complicates the design and evaluation of preaccession IST programs and is an important factor in the recommendation for a demonstration project.

Institutional Barriers to Implementation Exist

In addition to the difficult choices associated with developing and using civilian-provided IST programs, we believe that the military's inclination to embrace widespread use of civilian institutions is in doubt and is a cause for concern in future attempts at implementing civilian training programs. Furthermore, military resistance to civilian-provided training is not likely to be overcome simply with positive results from a demonstration project. It seems clear that without appropriate incentives, the propensity of the services will be to shy away from civilian-provided IST.

Even if military objections are overcome, implementation may not be straightforward. Criteria for selecting civilian institutions, monitor-

ing training and its outcomes, and so on, would have to be worked out. Given the decentralized nature of the civilian providers, implementation guidelines must be flexible enough to respond to local conditions. Beyond that, details for implementing different types of programs remain unknown, but could be examined in the course of a demonstration project.

RECOMMENDATIONS

While the decision to use civilian-provided IST may appear to be relatively straightforward, it will in most cases be highly complex. Based on our analysis of the issues and mechanisms involved in implementing civilian-provided IST programs, we have developed several recommendations on how best to proceed.

Develop a Joint-Service Working Group on Training Policy

As we sought to gather information regarding each service's past and current experience with and policies toward civilian-provided training, we discovered only minimum informal interservice coordinating mechanisms. The current interservice coordinating body for training is the Inter-Service Training Review Organization (ITRO). Although this organization strives to coordinate training across the services, because of its informal nature it does not significantly affect training policymakers, either within the services or within OASD. This can only act to limit its effectiveness. As the need for interservice coordination grows, formalized procedures for addressing interservice training issues become increasingly important. They will be especially needed for coordinating civilian-provided IST for all four services.

In addition to our more general concerns about the need for a formalized coordinating and decisionmaking mechanism within the joint-service training community, we believe that such an organization is also required for the proper conduct of a demonstration project. Thus, we are recommending the development of a Joint-Service Working Group on Training Policy headed by a high-level steering committee. The steering committee will be important in realizing the use of civilian-provided IST. It will both insure the attention of policymakers within the services as well as work to diminish institutional resistance to civilian-provided training. Thus, it is our recommendation that a steering committee and working group be developed.

Undertake a Series of Demonstration Projects

In our judgment, neither past nor current civilian-provided IST programs within the services have been evaluated properly. There is a multitude of reasons why this is the case. Nonetheless, as these programs become more important, particularly in improving and maintaining the level of training of our reserve component forces, valid evaluations of them take on increasing significance. To state the obvious, as resources become increasingly scarce and systems increasingly costly, the resources available for training must be husbanded carefully. Policymakers simply cannot make wise decisions without information on the cost and effectiveness of different training strategies.

Based on an examination of past history, current programs, and organizational capabilities and requirements, we have proposed a number of alternative civilian/military training scenarios in Sec. 5 of this report. These scenarios include both preaccession and postaccession as well as active and reserve component programs and provide the basis for a series of demonstration projects. We believe that these demonstration projects will provide the information needed by policymakers. It is our recommendation that they be conducted as the first charge of the Joint-Service Working Group on Training Policy described above.

Appendix
LATERAL ENTRY PROGRAMS

We define lateral entry as the enlistment of personnel who are not required to go through initial skill training, due to their having prior relevant work experience or technical education. Lateral entry may or may not be associated with award of a higher pay grade. The Army, Navy, and Air Force each have provisions for utilizing prior-service and nonprior-service lateral entrants as an alternative to accessions that require both basic and initial skill training. The Marine Corps currently takes in very few lateral entrants, and they must have prior service. Copeland and Thompson (1982) provide a quick background sketch of lateral entry programs that were in place during the early 1980s. In this section we present information that we have been able to obtain on current service lateral entry procedures.

Service lateral entry programs differ sufficiently to warrant separate descriptions. Despite their differences, it is clear that none of the services use lateral entry as a significant alternative to ordinary enlistment. Service lateral entry procedures do not appear to reflect a broader vision that prior civilian technical training can be substituted for military training on a substantial scale.

ARMY

The "Army Civilian Acquired Skills Program" (ACASP) is the successor to the "US Army Stripes for Skills Program."[1] Through the program, enlistees are allowed to bypass initial skill training and become qualified in an MOS at an advanced pay grade. ACASP is open to prior- and nonprior-service personnel who are enlisting in either the active or reserve components. The governing regulation for ACASP includes a multifaceted statement of purpose. The five program objectives are paraphrased below.

1 Acquisition of civilian skills needed by the Army

2. Increased job satisfaction

3. Improved personnel classification

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[1]The governing regulation for ACASP is AR 601-210.

4. Reduced training loads and costs

5. Added means for rapid mobilization

Despite this ambitious set of objectives, few Army enlistees are actually acquired via ACASP. Less than 1 percent of regular Army and Army reserve enlistments are made through this program. Most of these enlistments are for nonprior-service personnel. A major barrier to ACASP entry is the lengthy screening and classification procedures that the governing regulation requires. Army recruiting and personnel staff simply have little incentive to acquire many enlistments via ACASP. The program does, however, serve a more general policy goal for the Army. This policy is that all recruiting market segments should be tapped to at least some extent. ACASP-eligible applicants represent a market segment the Army wishes to attract, albeit in modest numbers—much as it seeks to attract applicants who need money for college, through the Army College Fund and the Montgomery GI Bill.

Aside from basic eligibility requirements for enlistment, ACASP accessions must meet MOS-specific skill training or work experience prerequisites. The civilian training and experience must have occurred within 24 months of enlistment. ACASP applications are processed by Army recruiters with the aid of the REQUEST job classification computer program. ACASP does not require recruits to pass a skill qualification (bypass) test. Instead, ACASP applicants must present evidence of completion of required civilian training or job experience (diplomas, certificates, union cards, employment records, etc.). As mentioned above, the application process of collecting and validating appropriate _ .iments is a lengthy and labor-intensive one.

ACASP provides for lateral entry on the basis of either relevant civilian work experience or skill training. Lateral entry on the basis of civilian work experience or some combination of work experience and skill training (typically two years total) can occur within over 100 noncombat MOSs, and it results in the award of an E-4 pay grade. Table A.1 lists these MOSs. Lateral entry on the basis of civilian vocational/technical (VOTECH) training alone occurs within many of the medical MOSs and within 17 nonmedical MOSs. Table A.2 lists the latter 17 MOSs. VOTECH training-based lateral entry into a designated medical MOS results in the award of an E-4 pay grade. VOTECH training-based lateral entry into one of the 17 nonmedical MOSs results in the award of an E-3 paygrade.

Table A.1

Army MOSs for Civilian Work Experience-Based Lateral Entry

MOS	Title
25P	Visual Information/Audio Documentation Specialist
25Q	Graphics Document Specialist
25S	Still Documentation Specialist
27B	Land Combat Support System Test Specialist
27E	Tow/Dragon Repairer
29V	Strategic Microwave Systems Repairer (RA only)
29Y	Satellite Communication Equipment Repairer
31C	Single Channel Radio Operator
31L	Wire Systems Installer
33V	Electronic Warfare/Intercept Aerial Sensor Repairer (RA only)
35G	Biomedical Equipment Specialist—Unit Level
35H	Test Measurement and Diagnostic Equipment Maintainer (RA only)
35U	Biomedical Equipment Specialist—Advanced
36L	Transportable Automatic Switching Systems Op/Maintainer (RA only)
39C	Target Acquisition Surveillance Radar Repairer (RA only)
39E	Special Electrical Devices Repairer
41B	Topographic Instrument Repair Specialist
42C	Orthotic Specialist
42D	Dental Laboratory Specialist
42E	Optical Laboratory Specialist
43M	Fabric Repair Specialist
44B	Metal Worker
44E	Machinist
45B	Small Arms Repairer (RA only)
46Q	Journalist
46R	Broadcast Journalist
51B	Carpentry and Masonry Specialist
51G	Materials Quality Specialist
51K	Plumber
51M	Firefighter
51R	Interior Electrician
52C	Utilities Equipment Repairer
52D	Power Generation Equipment Repairer (RA only)
52G	Transmission and Distribution Specialist
57E	Laundry and Bath Specialist
57F	Graves Registration Specialist
62B	Construction Equipment Repairer
62E	Heavy Construction Equipment Operator
62F	Crane Operator
62G	Quarrying Specialist
62H	Concrete and Asphalt Equipment Operator
62J	General Construction Equipment Operator
63B	Light Wheel Vehicle Mechanic
63G	Fuel and Electrical Systems Repairer
63H	Track Vehicle Repairer
67N	Utility Helicopter Repairer
67T	Tactical Helicopter Repairer

Table A.1—continued

MOS	Title
67U	Medium Helicopter Repairer
67V	Observation Helicopter Repairer
68B	Aircraft Powerplant Repairer (USAR only)
68D	Aircraft Powertrain Repairer
68F	Aircraft Electrician
68G	Aircraft Structural Repairer
68H	Aircraft Pneudraulics Repairer
68L	Avionic Communications Equipment Repairer
68N	Avionic Mechanic
68Q	Avionics and Flight System Repairer
68R	Avionics Special Equipment Repairer
71C	Executive Administrative Assistant
71G	Patient Administration Specialist
71L	Administrative Specialist
72E	Tactical Telecommunications Center Operator
74D	Computer/Machine Operator
74F	Programmer/Analyst
76J	Medical Supply Specialist
77L	Petroleum Laboratory Specialist
77W	Water Treatment Specialist
81B	Technical Drafting Specialist
81C	Cartographer
82B	Construction Surveyor
82D	Topographic Surveyor
83E	Photo and Layout Specialist
83F	Printing and Bindery Specialist
88H	Cargo Specialist
88K	Watercraft Operator
88L	Watercraft Engineer
88M	Motor Transport Operator
88P	Locomotive Repairer (USAR only)
88Q	Railway Car Repairer (USAR only)
88R	Airbrake Repairer (USAR only)
88S	Locomotive Electrician (USAR only)
88T	Railway Section Repairer (USAR only)
88U	Locomotive Operator (USAR only)
88V	Train Crewmember (USAR only)
88W	Railway Movement Coordinator (USAR only)
91B	Medical NCO (USAR only)
91C	Practical Nurse
91D	Operating Room Specialist
91E	Dental Specialist
91H	Orthopedic Specialist
91J	Physical Therapy Specialist
91L	Occupational Therapy Specialist
91N	Cardiac Specialist
91P	X-Ray Specialist
91Q	Pharmacy Specialist

Table A.1—continued

MOS	Title
91S	Preventive Medicine Specialist
91T	Animal Care Specialist
91U	Ear, Nose, and Throat Specialist
91V	Respiratory Specialist
91Y	Eye Specialist
92B	Medical Laboratory Specialist
92E	Cytology Specialist
93C	Air Traffic Control Operator
93D	Air Traffic Control System, Subsystem, and Equipment Repairer
94B	Food Service Specialist
94F	Hospital Food Service Specialist
96B	Intelligence Analyst
96D	Imagery Analyst
97E	Interrogator
98G	Electronic Warfare/Signal Intelligence Voice Interceptor
01H	Biological Sciences Assistant
02B	Cornet/Trumpet Player
02C	Baritone/Euphonium Player
02D	French Horn Player
02E	Trombone Player
02F	Tuba Player
02G	Flute/Piccolo Player
02H	Oboe Player
02J	Clarinet Player
02K	Bassoon Player
02L	Saxophone Player
02M	Percussion Player
02N	Piano Player
02T	Guitar Player
02U	Electric Bass Guitar Player

All nonprior-service ACASP accessions must attend basic training. ACASP also requires a period of proficiency training in which program enrollees function in their enlisted MOS at their assigned units. This training is designed to serve as a transition period during which the enlistees learn to apply civilian-acquired skills to their military setting. Proficiency training has a duration of eight weeks for regular army ACASP enlistees. Some MOSs require that ACASP enlistees acquire additional military skill training for the award of the MOS. For example, the 91C MOS (practical nurse) requires the ACASP enlistee to attend the 91A (medical technician) AIT course.

Table A.2

**Army MOSs for Civilian Vocational/Technical
Training-Based Lateral Entry**

MOS	Title
44B	Metal Worker
44E	Machinist
51B	Carpentry and Masonry Specialist
51R	Interior Electrician
57F	Graves Registration Specialist
63B	Light Wheel Vehicle Mechanic
63G	Fuel and Electrical Systems Repairer
71C	Executive Administrative Assistant
71L	Administrative Specialist (USAR only)
74F	Programmer/Analyst
77W	Water Treatment Specialist (USAR only)
81B	Technical Drafting Specialist
81C	Cartographer
81E	Illustrator
82B	Construction Surveyor
83E	Photo and Layout Specialist
94B	Food Service Specialist

NAVY

The Navy currently has two lateral entry programs for which both prior-service and nonprior-service applicants may be eligible. The first program is the "Advanced Pay Grade" (APG) program for Navy reserve applicants. The second program is the "Direct Procurement Enlistment Program" (DPEP) for active-duty applicants. These programs differ mainly in utilization level. The APG program enlisted 1243 prior-service and 780 nonprior-service applicants in fiscal year 1990. The DPEP enlisted only eight applicants over the same time period.[2]

The purpose of the APG is to fill undermanned Navy petty officer ratings with recruits who possess specialized civilian job experience. All Navy ratings are eligible for rating award via APG, but at any given point in time several ratings are actually closed to lateral entry because of adequate manning. The APG program reflects a longstanding Navy reserve emphasis on using lateral entrants to fill middle-

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[2]The APG program is administered by the Naval Reserve Recruiting Command. The DPEP is administered by the Navy Recruiting Command. The procedures of these programs are documented in chapters 10 and 6 of the Navy Recruiting Manual, respectively.

grade petty officer slots in ratings that are considered to be severely undermanned.

The APG program is geared toward the lateral entry of enlistees who possess a greater amount of relevant job experience than either Army or Air Force lateral entrants. The typical APG lateral entrant has several years of prior job experience and often some years of supervisory experience. APG entrants are awarded correspondingly higher pay grades. Navy reserve lateral entrants are awarded pay grades ranging from E-3 to E-6 depending on amount and quality of civilian work/supervisory experience.

The process of enlisting recruits via the APG program is designed to assess the civilian work and supervisory experience of applicants with respect to Navy occupational skill requirements. APG procedures appear to be about as time- and labor-intensive as ACASP ones. Four different levels of authority are involved in the awarding of an advanced pay grade, starting with initial document collection and validation at the recruiting station and ending with final approval at Naval Reserve Recruiting Command. APG is also similar to ACASP in not requiring recruits to pass a skill qualification (bypass) test.

The DPEP for active-duty Navy applicants appears to be very similar to the Navy reserve APG in terms of procedures. As with the APG program, there is a well-defined set of actions and authorizations that must be conducted before an enlistment occurs under DPEP. The primary difference between the two programs is that the latter program is rarely utilized.

As a final note, during the early 1980s, the Navy Personnel Research and Development Center (NPRDC) conducted research on an expanded lateral entry program known as LEAP (lateral entry accession program).[3] LEAP was a research initiative which was to have culminated in a full-scale lateral entry program for both prior- and nonprior-service personnel, with an emphasis on the latter. LEAP was never implemented by the Navy.

AIR FORCE

The enlisted classification squadron at Lackland Air Force Base, Texas, is the primary gatekeeper for lateral entry into the Air Force. Our information on Air Force lateral entry procedures comes courtesy of this organization. Most bypass tests are given during basic train-

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[3]Baker and Hamovitch (1983) provide some information on the design of the computer-based implementation of LEAP.

ing at Lackland. Little emphasis is placed on the lateral entry option during recruiting. There is a provision for allowing guaranteed job enlistees to test out of technical training by passing an Air Force Specialty (AFS) specific bypass test at the MEPS, but only a small number of recruits are given bypass tests at the MEPS.

The proportion of enlistees who end up bypassing technical training via a test is very small, less than 1 percent.[4] Trainees can attempt to test out of technical training in 79 AFSs, or about 35 percent of the total number of AFSs. Recruits who pass the test are given a job classification through the Air Force Military Personnel Center. Table A.3 lists the AFSs that have bypass tests.

It is important to note that recruits who skip technical training via a bypass test do not receive a higher pay grade. They receive the same skill qualification designation that a technical school graduate would receive, but they arrive at their first duty station with the same pay-grade as technical school graduates. Thus, there would seem to be little incentive for Air Force applicants to become lateral entrants.

It would appear that the purpose of the Air Force lateral entry procedure is mainly to lower training loads and costs. The Air Force does not seem to actively recruit for lateral entrants, nor does it award pay grade increases for recruits who bypass technical training, as do the Army and the Navy. The Air Force does not use its lateral entry mechanism (it really isn't a formal program) to acquire recruits who have enough specialized civilian job experience to warrant pay grade advancement. In this respect, Air Force lateral entrants differ from Army and Navy lateral entrants. On the other hand, they more closely resemble the candidates for civilian VOTECH training characterized elsewhere in this report than do either Army or Navy lateral entrants.

MARINE CORPS

The Marine Corps does not have a formal program for lateral entry enlistments. No lateral entry is currently permitted for nonprior-service personnel, and the number of prior-service lateral entrants to fill unexpected MOS vacancies is very small, on the order of about ten per year.[5]

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[4]Enlistees can also bypass technical training without taking a test, if they have been assigned to a "direct duty" AFS.

[5]This information was obtained from Headquarters, Marine Corps Manpower, Procurement, and Enlisted Recruiting Office (HQMC/MMRE).

Table A.3

Air Force AFSs That Have Bypass Tests

AFS	Title
20130	Apprentice Intelligence Operations Specialist
20131	Apprentice Target Intelligence Specialist
20630	Apprentice Imagery Interpreter Specialist
23130	Apprentice Visual Information Media Specialist
23131	Apprentice Graphics Specialist
23132	Apprentice Still Photographic Specialist
23330	Apprentice Imagery Production Specialist
24130	Apprentice Safety Specialist
27131	Apprentice Airfield Management Specialist
27430	Apprentice Command and Control Specialist
30331	Apprentice Air Traffic Control Radar Specialist
30332	Apprentice Aircraft Control and Warning Radar Specialist
30430	Apprentice Wideband Communications Equipment Specialist
3043_	Apprentice Navigational Aids Equipment Specialist
30434	Apprentice Ground Radio Communications Specialist
30435	Apprentice Television Equipment Specialist
36130	Apprentice Antenna/Cable Systems Specialist
36131	Apprentice Cable Splicing Installation Specialist
36234	Apprentice Telephone and Data Circuitry Equipment Specialist
39230	Apprentice Maintenance Scheduling Specialist
45430A	Apprentice Aerospace Propulsion Specialist, Jet Engines
45430B	Apprentice Turboprop Propulsion Specialist
45431	Apprentice Aerospace Ground Equipment Mechanic
45432	Apprentice Aircrew Egress Systems Mechanic
45433	Apprentice Aircraft Fuel Systems Mechanic
45434	Apprentice Aircraft Pneudraulic Systems Mechanic
45631	Apprentice Electronic Warfare Systems Specialist
46130	Apprentice Munitions Systems Specialist
47230	Apprentice Special Purpose Vehicle and Equipment Mechanic
47231	Apprentice Special Vehicle Mechanic
47232	Apprentice General Vehicle Mechanic
47233	Apprentice Vehicle Body Mechanic
49131	Apprentice Communications Computer Systems Operator
49132	Apprentice Communications Computer Systems Programming Specialist
49231	Apprentice Communications Systems Radio Operator
49330	Apprentice Communications Computer Systems Control Specialist
54230	Apprentice Electrician
54231	Apprentice Electric Power Line Specialist
54232	Apprentice Electrical Power Production Specialist
54530	Apprentice Refrigeration and Air Conditioning Specialist
54531	Apprentice Fuel Systems Maintenance Specialist
54532	Apprentice Heating Systems Specialist
55130	Apprentice Pavements Maintenance Specialist
55131	Apprentice Construction Equipment Operator

Table A.3—continued

AFS	Title
55230	Apprentice Structural Specialist
55232	Apprentice Metal Fabricating Specialist
55235	Apprentice Plumbing Specialist
55330	Apprentice Site Developer Specialist
55530	Apprentice Production Control Specialist
56631	Apprentice Environmental Support Specialist
59131	Apprentice Marine Engine Specialist
60230	Apprentice Passenger and Household Goods Specialist
60231	Apprentice Freight and Packaging Specialist
60330	Apprentice Vehicle Operator/Dispatcher
61231	Apprentice Subsistence Operations Specialist
62330	Apprentice Services Specialist
63130	Apprentice Fuel Specialist
64530	Apprentice Inventory Management Specialist
65130	Apprentice Contracting Specialist
67231	Apprentice Financial Management Specialist
67232	Apprentice Financial Services Specialist
70230	Apprentice Information Management Specialist
70330	Apprentice Reprographics Specialist
73230	Apprentice Personnel Specialist
73231	Apprentice Personal Affairs Specialist
74130	Apprentice Fitness and Recreation Specialist
75130	Apprentice Education Specialist
90130	Apprentice Aeromedical Specialist
90230	Apprentice Medical Service Specialist
90232	Apprentice Surgical Service Specialist
90330	Apprentice Radiologic Specialist
90430	Apprentice Cardiopulmonary Laboratory Specialist
90530	Apprentice Pharmacy Specialist
90630	Apprentice Medical Administrative Specialist
90730	Apprentice Bioenvironmental Engineering Specialist
91430	Apprentice Mental Health Service Specialist
91530	Apprentice Medical Materiel Specialist
92630	Apprentice Diet Therapy Specialist

BIBLIOGRAPHY

Baker, Meryl S., and Marc A. Hamovitch. *Strategy for Enlisting Lateral Entrants Via Computer Technology (SELECT): An Automated System for Determining Rating and Pay Grade Qualification for Potential Navy Lateral Entry Accessions*, The Navy Personnel Research and Development Center, NPRDC-TR-83-33, September 1983.

Bennett, Charles E., Bill Burnett, John O. Hunter, and Wayne Newton. "How Can Community Colleges Strengthen America's Defense Readiness?" *AACJC Journal*, February 1983, pp. 32–41.

Bragg, Debra D., and Jim Jacobs. "A Framework for Evaluating Community College Customized Training," paper presented to the NCOE Sixteenth Annual Conference, October 1990.

Bureau of Labor Statistics. *The Occupational Outlook Handbook*, 1990–91 Edition, U.S. Department of Labor, April 1990.

Carnevale, Anthony P., Leila J. Gainer, and Eric R. Schulz. *Training the Technical Work Force*, Jossey-Bass Publishers, San Francisco, California, 1990.

Chalupsky, Albert B., and Marie R. Peirano-Dalldorf. *Vocational Education–Defense Establishment Collaboration: State-of-the-Practice Report*, Office of Vocational and Adult Education, Washington, D.C., March 1985.

Chance, William. "Occupational Education, Economic Competitiveness, and The West," paper presented to the Western Governors' Association, June 1988.

Chase, Shirley A., and John E. Tennant. *Employing Retired Military Personnel as Vocational Education Teachers*, National Center for Research in Vocational and Adult Education, Ohio State University, Columbus, Ohio, 1986.

Copeland, D. Robert, Roger V. Nutter, Richard Braby, and Janet Thompson. "Issues Relating to the 'Skilled Enlisted Reserve Training Act,'" paper presented to the Training Analysis and Evaluation Group, Orlando, Florida, March 1983.

Copeland, D. Robert, and Janet Thompson. "Lateral Entry Programs Conducted by the Department of Defense," paper presented to the

Training Analysis and Evaluation Group, Orlando, Florida, August 1982.

Goodwin, David. *Postsecondary Vocational Education*, Volume IV, National Assessment of Vocational Education, U.S. Department of Education, Washington, D.C., 1989.

Grissmer, David W., Richard Buddin, and Sheila N. Kirby. *Improving Reserve Compensation: A Review of Current Compensation and Related Personnel and Training-Readiness Issues*, RAND, R-3707-FMP/RA, September 1989.

Grissmer, David W., and Sheila Nataraj Kirby. *Attrition of Nonprior-Service Reservists in the Army National Guard and Army Reserve*, RAND, R-3267-RA, April 1985.

Grissmer, David W., and Sheila N. Kirby. *Changing Patterns of Nonprior Service Attrition in the Army National Guard and Army Reserve*, RAND, R-3626-RA, July 1988.

Grubb, W. Norton, and Lorraine M. McDonnell. *Local Systems of Vocational Education and Job Training: Diversity, Interdependence, and Effectiveness*, RAND, R-4077-NCRVE/UCB, 1991.

Haggstrom, Gus W., Thomas J. Blaschke, and Richard J. Shavelson. *After High School, Then What? A Look at the Postsecondary Sorting-Out Process for American Youth*, RAND, R-4008-FMP, 1991.

Hanushek, Eric A. "Conceptual and Empirical Issues in the Estimation of Educational Production Functions," *The Journal of Human Resources*, Volume 14, No. 3, Summer 1979, pp. 351–388.

Hanushek, Eric A. "The Economics of Schooling: Production and Efficiency in Public Schools," *Journal of Economic Literature*, Volume XXIV, September 1986, pp. 1141–1177.

Hoachlander, E. Gareth. "Systems of Performance Standards and Accountability for Vocational Education," paper presented to the NASDVTEC Fall Leadership Conference, September 1990.

Krause, Scot, and Gerald M. Parker. *Proceedings of the National Study Tours on Military Preparedness*, Office of Vocational and Adult Education, Washington, D.C., 1984.

Mangum, Stephen L., and David E. Ball. "The Transferability of Military-Provided Occupational Training in the Post-Draft Era," *Industrial and Labor Relations Review*, Volume 42, No. 2, January 1989, pp. 230–245.

McDonnell, Lorraine M., and W. Norton Grubb. *Education and Training for Work: The Policy Instruments and the Institutions,* RAND, R-4026-NCRVE/UCB, 1991.

Murname, Richard J. "Improving Education Indicators and Economic Indicators: The Same Problems," *Educational Evaluation and Policy Analysis,* Volume 9, No. 2, Summer 1987, pp. 101–116.

National Occupational Information Coordinating Committee. *Status of the NOICC/SOICC Network, June 30, 1987,* NOICC Administrative Report No. 13, Washington, D.C., December 1987.

Office of the Assistant Secretary of Defense (Force Management and Personnel). *Department of Defense Military Manpower Training Report for FY 1990,* March 1989.

Office of the Assistant Secretary of Defense (Force Management and Personnel). *Human Resource Development in the Department of Defense: Issues and Initiatives for Military Selection and Classification,* July 1990.

Orvis, Bruce R. *Relationship of Enlistment Intentions to Enlistment in Active Duty Services,* RAND, N-2411-FMP, September 1986.

Parnell, Dale. *The Neglected Majority,* The Community College Press, Washington, D.C., 1985.

Pincus, Fred L. "Customized Contract Training in Community Colleges: Who Really Benefits?" paper presented to the Annual Convention of the American Sociological Association, Washington, D.C., August 1985.

Richardson, Michael A., and Jean W. Fletcher. *Direct Procurement of Vocational-Technical Trainees into the Selected Reserve Sea and Air Mariner Program,* Naval Planning, Manpower, and Logistics Division, Center for Naval Analyses, Alexandria, Virginia, September 1985.

Ruff, Richard R., et al. *Military Training: Potential Roles for Vocational Education,* National Center for Research in Vocational Education, Columbus, Ohio, October 1981.

Standlee, L., C. Belinski, and J. Saylor. *Electronic Technician Direct Procurement Petty Officer (DPPO) Pilot Program: Phase I.* Naval Personnel Research and Development Center, San Diego, California, NPRDC-TR-74-20, March 1974.

Standlee, L., C. Belinski, and J. Saylor. *Electronics Technician Direct Procurement Petty Officer (DPPO) Pilot Program: Phase II.* Naval

Personnel Research and Development Center, San Diego, California, NPRDC-TR-75-37, June 1975.

Sticht, Thomas G., William B. Armstrong, Daniel T. Hickey, and John S. Caylor. *Cast-Off Youth: Policy and Training Methods from the Military Experience*, Praeger Publishers, New York, 1987.

U.S. Army Training and Doctrine Command. *Vocation Training Strategies (VTIS) Final Report*, February 1, 1991.

Van Matre, Nick. The *Naval Reserve Sea Air Mariner Votech Program: Qualified Civilian Schools for Ramp*, Training Laboratory, Naval Personnel Research and Development Center, San Diego, California, TL 85-4, September 1985.

Vocational Education and Defense Preparedness Seminar Proceedings, American Vocational Association, Inc., Arlington, Virginia, Department of Defense, Washington, D.C., and Department of Education, Washington D.C., 1982.

Walker, Mary Margaret. *Status of the NOICC/SOICC Network: June 30, 1987*, NOICC Administrative Report No. 13, National Occupational Information Coordinating Committee, Washington, D.C., December 1987.

Watt, David M. "Selected Military Attitudes Toward a Career in Teaching: A Potential Source of Teacher Candidates," paper presented to the Annual Meeting Mid-South Educational Research Association, Mobile, Alabama, November 11–13, 1987.

Wilms, Wellford W. "Proprietary Schools: Strangers in Their Own Land," *Change*, January/February 1987, pp. 10–22.

Wirt, John G., Lana D. Muraskin, David A. Goodwin, and Robert H. Meyer. *Summary of Findings and Recommendations*, Final Report, Volume I, National Assessment of Vocational Education, U.S. Department of Education, Washington, D.C., 1989.